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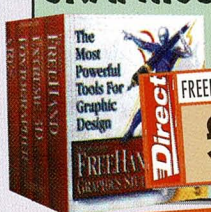

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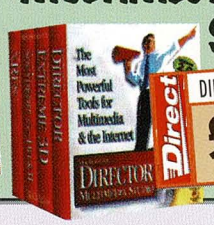

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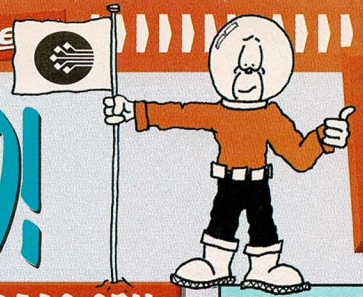

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MACFORMAT

The

ISSUE 43 ■ NOVEMBER 1996

Reviews A-Z

Your index to products reviewed in this issue

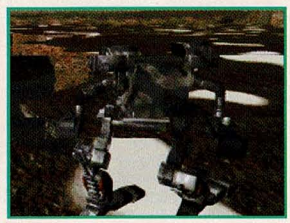
Adventures of Peter Rabbit 104
Authorware Academic 94
Descent: Levels of the World 120
Director Academic 94
Electronique d2 2.6Gb MO 84
Electronique d2 2Gb AV HD 82
I Can Do Magic! 108
Iomega Zip Drive 85
KidPhonics 106
KidWorks Deluxe 108
The Lie 104
The Lost Mind of Dr Brain 110
MechWarrior 2 116
MicroNet 2.6Gb MO 83
MicroNet 2Gb HD 82
MicroNet Jaz Drive 86
Olympus 230Mb PowerMO 83
Olympus 2600 PowerMO 84
Overdrive 1.0 90
Performance Direct 2Gb HD 81
Pinball 95 118
Q10 Parametric EQ 101
QX/SDII Expander 102
RAM Doubler 2.0 98
S1 Stereo Imager 103
SimIsle 115
Strategy Games of the World 106
SyQuest EZ135 85
Tekware 2Gb HD 81
Xyratex 5000 MO 83
Xyratex MaxIt Drive 85
Zork: Nemesis 122

computer arts
The art, design and technology magazine

32-page sampler free with MACFORMAT! *Computer Arts* is Future's magazine for anyone who's into computer design – now with a great dual-format Mac/PC CD-ROM every issue.

Live Picture's *Overdrive:* compositing made easy on page 90.

How does the Jaz Drive size up? Storage media tested: page 76.



***MechWarrior 2:* stomp around in a giant robot suit on page 116.**

The Chooser

The Chooser 131
New this issue! 32 pages of buying advice, hot product news, and, above all, dozens of the best Mac products to help you choose wisely. Plus: look up all the details on your own model of Macintosh.

Free Reader Ads 158
Catch the latest bargains while you can – Macs, printers, monitors and loads of software.

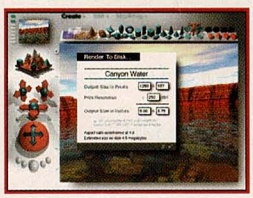
Win! Win! Win!

Two chances to win with MACFORMAT this issue, with prizes worth over £1,350!

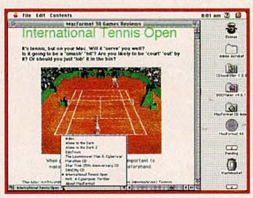
Claris software bundle 130
We have an exclusive bundle of three of the latest Claris programs, plus three copies of *Home Page* for runners-up.

Epson Stylus 500 printer 162
The best colour you've ever seen from an inkjet printer, and we've got two of these brilliant new machines up for grabs.

How to...



Bryce 2 58
Create your own fantastic worlds with MetaTools' 3D landscape creator. (Usable demo on last issue's Cover CD, sample files this issue.) We show you the tricks that will take your scene to another dimension!



CD Resources 62
Every issue, the MACFORMAT Cover CD brings you the most useful programs around. Find out how to get the most out of three of our favourites.

Go relational with FM Pro 3 65
Discover relations you never knew you had as we show you how to link up databases with *FileMaker Pro 3*.

MacAnswers 68
Your Mac problems solved: the in and outs of hard drives, reading PC disks and how to shoo away the Sad Mac blues.

Regulars

Welcome to MACFORMAT 6
Discover the team's views on life (artificial, that is).

Web highlights 14
Ten top Web pages for you to visit. Don't spend time on the Web until you've read this.

News 16
Mac OS 8 could be coming sooner than you think – or at least some of it might. Plus: new PowerBooks on the way at last; and watch out, copyright pirates. *Photoshop's* got a new trick up its sleeve.

What's New: product news 20
The latest crop of hot products includes *PageMaker 6.5* and *Photoshop 4.0* from graphics master Adobe. Plus: discover the secrets of Atlantis and help a boy become a king...

Apple Talk: letters 24
What you'd *like* to see in Mac OS 8, poor Internet Service Providers, anti-American bias, and porn.

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... But if you did miss one, here's your chance to catch up.

Talking Point 129
Why the Mac hasn't got a chance. (That'll get you going!)

Classic System Crew 129
MACFORMAT's own artificial lifeforms go evolutionary.

Next Issue 161
More great stuff in just four weeks – and a *free* 100-page book!

Finder

IT'S ALIVE!

Artificial life 30

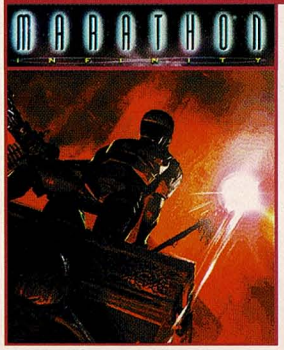
It's the dream (or nightmare) in many a science fiction film: computers and machines gaining consciousness to become truly alive. Beneath the fantasy is a growing field of development. Your Mac could soon be occupied by virtual creatures, which perform tasks for you and learn as they do so – Apple's working on them for the new OS! MACFORMAT looks at the how A-life could transform your everyday work, creativity or leisure, as well as the way you use your Mac or the Internet...

Who needs DTP?

WP vs DTP 46

For everyday layout and design tasks, you might not need to invest in an expensive, RAM-hungry, hard-to-learn DTP package. Could your word processor do all you need...?

MACFORMAT Cover Discs



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Your Cover CD-ROM 8

Over 600Mb – four complete levels of *Marathon Infinity; Abuse;* Bungie demos; *Apache Longbow; Authorware 3.0, Muppet Treasure Island* and *Origins of Mankind* demos. Plus artificial life software selection, 100Mb of the latest shareware hot from the Net, and everything below...

Your Cover Disk 12

Addictive strategy puzzle gaming with *Snood*, plus *NS-Tower, Vivarium, MacTypingTutor* and five excellent utilities. 2.8Mb of top software!

Reviews

Reviews section 75

39 pages of the most expert reviews anywhere.

Hardware

Storage media 76

You haven't run out of space *again?!* Time to look at your storage options in our group test:

Hard drives

Performance Direct 2Gb 81
Tekware 2Gb 81
Electronique d2 2Gb AV 82
MicroNet 2Gb 82

Magneto-optical drives

Olympus 230Mb PowerMO 83
Xyratex 5000 83
Micronet 2.6Gb 83
Olympus 2600 PowerMO 84
Electronique d2 2.6Gb 84

Removable drives

SyQuest EZ 135 85
Iomega Zip Drive 85
Xyratex MaxIt Drive 85
MicroNet Jaz Drive 86

Productivity

Live Picture Overdrive 1.0 90

Can this new graphics package win you over?

ON THE CD Authorware Academic 94
Director Academic 94

Two top authoring programs specially made for education: will they inspire you?

RAM Doubler 2.0 98

Now this famous utility *trebles* your RAM.

Digital audio plug-ins 100

The processing field surveyed in a new series:

Q10 Parametric EQ 101
QX/SDII Expander 102
S1 Stereo Imager 103

Plus: utilities for creating effects with ease.

Leisure

Multimedia for kids 104

Something for kids of all ages in our round-up.

Adventures of Peter Rabbit 104
The Lie 104
Kid Phonics 106
Strategy Games of the World 106
I Can Do Magic! 108
KidWorks Deluxe 108
The Lost Mind of Dr Brain 110

Games 115

Pinball, robots, trees and more besides.

SimIsle 115
MechWarrior 2 116
Pinball 95 118
Descent: Levels of the World 120
Zork: Nemesis 122

ON THE CD **Shareware Central 124**

And our top choice doesn't even work...

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Everything you wanted to know about MACFORMAT, plus our view of artificial life and "intelligent agents"...

Welcome again to MACFORMAT, Britain's best-selling Macintosh (and Mac-compatible!) magazine. Every issue we bring you:

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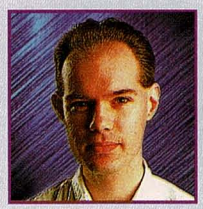
■ **Cover Disks and CD-ROMs** with demos so you can try software for yourself before you buy, useful utilities (specially chosen to complement features in the magazine), selected shareware programs, games, readers' contributions and much more.

Whether you're a veteran or a novice, MACFORMAT will help you get more out of your Macintosh, whatever you use it for.

About our writers

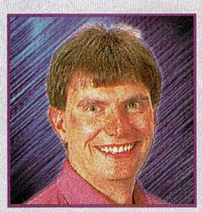
Alex Summersby

Our Editor learned about Macs by using them, and he reckons his is already intelligent. In fact, he's sure it's watching him. It always crashes just before he saves that irreplaceable file, freezes just when he's in a hurry, and now, right on deadline, the "t" on his keyboard is stttttttttttt



Richard Hill

Rich says his Mac is temperamental enough without going and giving the thing a personality. What if it's in a bad mood? Rich: "Open today's schedule please." Mac: "Shan't." Rich: "Oh go on, please?" Mac: "No, not until you apologise for calling me a son of a dishwasher."



Colin Dalziel

Our Disc Ed would like to see some "intelligent" software which can tell the difference between good and not-so-good shareware. That way he could leave it to find the good stuff while he gets on with important things like playing – er, *reviewing* the *Marathon infinity* demo.

Lindsay Bruce

Our Technical Writer just wishes his Mac was intelligent enough *now* to tell him why it trashes his files, corrupts his programs and comes up with stupid messages like "an unexpected error occurred". Of course it was unexpected – otherwise he would have saved his work first!

Derek Smith

Our technical expert has been spending this month with *Bryce,* trying to create a scene of primordial soup out of which artificial life could blossom. Unfortunately he was so successful that he now has to wait 50 million years for the finished image to render.

Rod Lawton

Our "productivity software" specialist says he wants an intelligent agent that will record everything his Mac does so that when it crashes, it learns to warn him next time with messages like "Error Type 11 soon" and "Don't forget that Force Quit is **[command] [option] [esc]**".

A word about prices...

We try to ensure that all prices quoted in editorial pages in MACFORMAT are accurate at the time of going to press, and they all *include* UK Value Added Tax at 17.5%. However, this may not necessarily be the case with prices appearing in advertisements, so we recommend that you always contact advertisers before ordering to confirm prices and availability.

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■ We try to make ourselves available to answer Cover Disc related and general reader calls on Wednesday afternoons from 2pm to 6pm, so please try to ring then. We cannot answer technical queries over the phone – sorry! We hope you'll understand that because we receive so much correspondence we can't promise to reply to faxes, e-mail or mail personally, even if you include an SAE.

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Are you a winner?

In MACFORMAT 38, we gave you the chance to win a Jaz Drive worth £469, courtesy of MicroNet. The winner is Jane Nixon of Hersham, near Walton-on-Thames. Well done, Jane – you can expect a MicroNet Jaz Drive and your first massive 1Gb cartridge soon.

In MACFORMAT 39, we offered the opportunity to get connected to the Internet. Three lucky MACFORMAT readers each receive a high-speed Motorola 3400 fax-modem, plus a year's free account with the popular service provider Demon Internet. And the winners are: D N Watts of Stratford-upon-Avon; M Waghorn from Bishops Stortford; and Aisha Bewley of Norwich. Congratulations, and don't forget to send us an e-mail!

Two more winners also receive a year's free use of the 100% local-rate Demon account. They are Kevin Bonnet of Girton, near Cambridge, and E Douglas from Westhill in Aberdeenshire. All five winners will be hearing from us soon.

Don't forget you have two chances to win with this issue: go for a Claris suite on page 130 and an Epson colour printer on page 162.

Find out how good the MicroNet Jaz Drive is in our giant storage media round-up, beginning on page 76.

Five readers get the chance to hook up to the Internet, thanks to Motorola's 28.8Kbps fax-modem and connections from Demon Internet.

we also won best supporting role

And the winner is... you.

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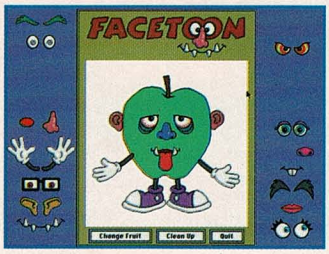
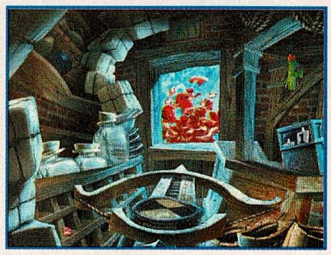
SAMSUNG

Marathon Infinity

Civilization



Authorware 3.0


Muppet Treasure Island

Your CD-ROM

With more goodies than a toyshop at Christmas, this issue's CD is packed with the latest demos, shareware and works of art. Colin Dalziel looks at what's included in this great selection.

Getting started

Welcome to the MACFORMAT 43 Cover CD. Here are some tips:

- **Some of the demos on the Cover CD require installation on your hard disk – they won't run direct from the CD. Many of these programs use an installer: once you've double-clicked on it, just follow the on-screen instructions and you should be fine. Even if there's no installer, it often helps to copy demos to your hard disk – at the very least they should run faster!**
- **The icons we use on the CD folders help to give it a friendly atmosphere, but they do slow it down. Install *CDIconKiller,* which is in the Resources folder on the CD, if you want to speed things up.**
- **If you have problems quitting any of the rolling demos on the Cover CD, just press [command] Q and you should go back to the Finder. If this doesn't work, press [command] [option] [escape] to force quit.**
- **It couldn't be easier to install System Extensions and Control Panels – just drag them over your closed System Folder and your Mac puts them in the right place for you. Then all you need to do is restart.**
- **Look for this icon throughout the issue – it will point you towards the CD programs connected with the feature or review you're reading.**

ON THE CD

Marathon Infinity

What is it? Playable demo
Where you'll find it: Demos folder
Mac: 68040 processor, 6Mb free RAM
PowerMac: any processor, 6Mb free RAM
Requires: System 7, 30Mb hard disk space, 640 x 480 screen, 256 colours

The *Marathon Infinity* demo brings you three pulse-racing levels of this 3D action game. Also included is one network level which enables two players to do battle.

The style of play should be familiar to you by now from the previous versions of *Marathon,* but if you're new to the game the best advice is to shoot everything that moves! Your task is to blast your way through the maze of tunnels on the spaceship *Marathon* and find the exit to the next level.

There are of course plenty of aliens in your way, and special tactics need to be employed to get through some of the trickier situations like when you are completely outnumbered. Only hours of practice will help you complete *Infinity* in the end.

Another vacuum cleaner bites the dust. Oooh, does it hurt? Tee hee...

Hey, what's this? A machine-gun that fires underwater? Cool...

To install

For improved game speed, copy the Marathon Infinity folder onto your hard drive. You'll need 30Mb free hard disk space.

Bungie Mayhem

Just in case you missed out on Bungie's other award-winning games, the Cover CD also includes a great collection of demos from this highly-rated games developer:

- ***Marathon 2***
- ***Marathon***
- ***Pathways Into Darkness***

conditioned unit
origin: Tycho Mechinated Mercenary
destin. conditioned unit 7
ref: Ruthless Combatant Units
I have some shocking news. It seems that the captain attempted to use the bridge transporter to escape planetside, and was killed when the signal was redirected to nearby space. I like to think he died repentent.
PgUp/PgDown/Arrows To Scroll
Return/Enter To Acknowledg
44 CLIPS (x8)
MA-75B CLIPS (x52)
MA-75B GRENADES (x7)
NAPALM CANISTER
SHOTGUN SHELLS (x2)
10MM FLECHETTE MAGAZI...
KKV-7 10MM FLECHETTE SMG
What's red and taps at the window? A Phfor in a microwave. Now remember, kids, don't try this at home. The aliens in *Marathon Infinity* are fully trained to do this.

Marathon Infinity Controls

Walk Forwards:	Key pad 8
Walk Backwards:	Key pad 5
Turn Left:	Key pad 4
Turn Right:	Key pad 6
Dodge Left:	Z
Dodge Right:	X
Look Up:	D
Look Down:	C
Look Ahead:	V
Fire primary trigger:	Space bar
Fire secondary trigger:	Option
Change weapons:	Key pad 7 and Key pad 9
Open door:	Tab

Artificial life

This issue MACFORMAT's cover feature looks at the growth of artificial life on the Mac and elsewhere, and asks if computers can truly become alive. To accompany this bout of philosophy, starting on page 30, we present a bundle of fun – the finest examples of artificial intelligence, and perhaps even life, you'll find.

Shareware

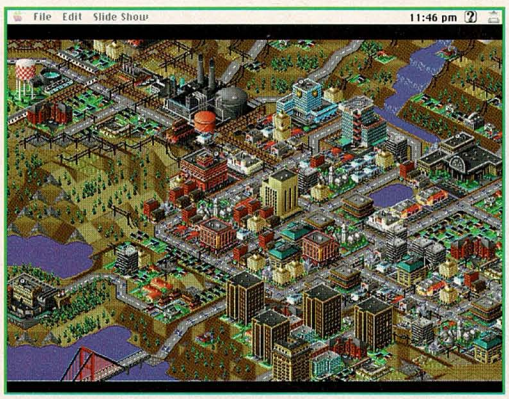
A great collection of shareware and freeware for you to see for yourself what the exciting field of artificial life software is all about. The collection includes examples of John Conway's bacterial *Life* simulators, a *HyperCard*-based program you can train to learn letters of the alphabet, a simulation of life inside a Vivarium and much more.

The Sim Collection

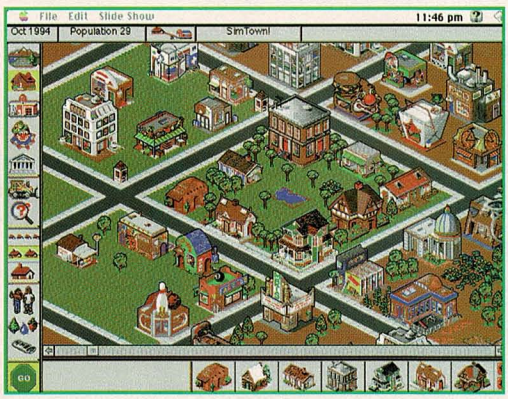
On the commercial side of the simulation world, we have demos of the best games available, including the award-winning *SimCity 2000* and *Civilization*.

If you have not met this style of game before, the idea is to build your own self-sufficient world. You have to make sure everything is well-balanced. For example, in *SimCity 2000* you need to make sure your population has enough food and you build power stations to generate energy. Time ticks away as you play, so if you pop to the loo you may find half of your capital city has burnt down because you forgot to employ a fire brigade!

Pillaging the locals to teach some manners is our idea of *Civilzation.*



In *SimCity 2000*, you have to produce a perfectly balanced world, where everything lives in harmony. Just like real life, there is always something to go wrnog.



If you don't like the hustle and bustle of the city, you should try living in *SimTown*, where you get a much better class of sim person, and much nicer housing of course.

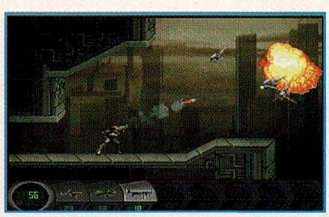
Abuse

What is it? Playable demo
Where you'll find it: Demos folder
Mac: 68040 processor, 6Mb free RAM
PowerMac: any processor, 6Mb free RAM
Requires: System 7, 12Mb hard disk space, 640 x 480 screen, 256 colours

The *Abuse* demo gives you four levels of this fast-scrolling shoot-'em-up. Very different from the action of previous Bungie titles, *Abuse* puts you in control of a character who is trapped in a high security facility. Thanks to biogenic experiments, all the other inmates are infected and turned into horrific, inhuman monsters.

Your mission is to destroy all of the beasts before the deadly epidemic can spread to the outside world. As you move through the tunnels in the gaol, you are attacked by a variety of the monsters; killing the monsters makes extra ammunition available. The first level is a gentle introduction; you even get a robotic voice to help you on your way. But you'll need to be fast on the draw as you move up the levels and use all your fighting skills if you want to save the world.

Expect an attack from any angle as you move about the maze of tunnels.



Once you've collected more powerful weapons you can really let loose.

To install

Must be installed onto hard disk.

Abuse your Mac

Deploy these controls if you hope to become a master of *Abuse:*

Move left:	**A**
Move right:	**D**
Up:	**W**
Down, through door:	**S**
Aim weapon:	**Mouse**
Fire:	**Mouse button**
Select weapon:	**Q and E**

CD Index

Use this listing as a folder-by-folder guide to what's on the Cover CD this issue and just where you'll find it.

Artificial Life folder
Software to accompany our cover feature, starting on **page 30.**

- Demos folder
  - *Civilization* playable demo
  - *SimCity 2000* rolling demo
  - *SimEarth* playable demo
  - *SimTower* playable demo
  - *SimTown* rolling demo
- Shareware/Freeware folder
  - *Bugs*
  - *Copy Cat 2.0*
  - *Easy Life 2.0*
  - *EVOLV-O-MATIC 0.8*
  - *Langton's Ant*
  - *LEE 2.0*
  - *Letter Learner*
  - *LifeLab 3.1*
  - *Mac Cellular Automata*
  - *MacTierra 1.8*
  - *Neoterics*
  - *TimGA 1.1*
  - *Tresvita*
  - *Vivarium*

Demos folder

- *Abuse*
- *Apache Longbow*

Here's a chance to try one of the best flight sims around – *Apache.*

- *Authorware 3.0*
- Bungie Mayhem Collection
  - *Marathon 2*
  - *Marathon*
  - *Pathways*
- *ClarisWorks* Trial 4.0Bv1
- Creative Essentials
- *Director 4.0*
- *Dogfight City*
- *FileMaker Pro 3.0* Trial
- *Harry & the Haunted House*
- *Marathon Infinity*
- *Muppet Treasure Island*
- *Origins of Mankind*
- *Peak 1.10*

MACFORMAT 43 Browser
Your interactive guide to the Cover CD highlights.

MACFORMAT 43 Floppy folder
It's all on the floppy disk, but it's all on the Cover CD too. See **page 12.**

- *Aliassistant*
- *MacTypingTutor 3.4.1*
- *NS-Tower 2.0*
- *Smart Scrolls 1.01*
- *SmartDelete 1.0*
- *Snood 1.1*
- *Vivarium*
- *Voldeps 1.5*
- *Yank 1.3*

➤ page 10

CD Index (continued)

Readers' Corner folder
The best of your contributions. Keep 'em coming!
- Art Gallery
- Mail
- Readers' Contributions

Read Me
Make sure you read this before you start exploring the Cover CD. It shows you the files you should install to get the most out of the disc.

Resources folder
No Mac software collection is complete without these essentials. See **page 62** for guides to three of these top programs.
- *Acrobat Installer 2.1*
- *CDIconKiller 1.3.3*
- *Disinfectant*
- *DOCMaker 4.6.1*
- *GraphicConverter 2.4.3*
- *MacFormat CD Index*
- *NewsWatcher*
- *QuickTime 2.5*
- *ResEdit*
- *ShrinkWrap*
- *SoftwareFPU 3.04*
- *Sound Manager 3.2*
- *StuffIt Expander*

Shareware Central folder
All the programs from this issue's shareware reviews. See **page 124.**
- *AgendaMaker2.3*
- *Drop Rename 2.0.0*
- *FrenchTranslator*
- *GermanTranslator*
- *HyperBox 1.0.1*
- *Let's Go Fishing*
- *McAfee VirusScan 1.0.1*
- *Net Manager 1.1*
- *Plain Talking*
- *Poetry Ink 2.03*
- *Real Domino Effect*
- *Sir Richard The Lion Hearted*
- *Weather 2.1*
- *X10 Scripting Addition*

Shareware Plus folder
The best of the rest of this month's shareware, hot from the Internet – there's over 100Mb to explore!
- After Dark folder
- Applications folder
- Comms folder
- Control Strip folder
- Developers folder
- Education folder
- Extensions folder
- Games folder
- Graphics folder
- HyperCard folder
- Icons folder
- Info folder
- Scripts folder
- Sound folder
- Updaters folder
- Utilities folder

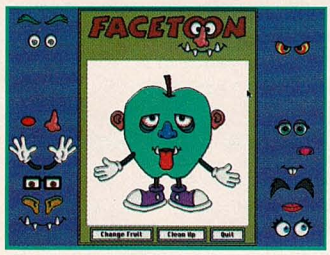
Tutorials folder
The files you need to follow this issue's how-to's.
- Bryce 2 Tutorial folder – **page 58**
- *DOCMaker 4.6.1* – **page 62**
- FMPRO folder – **page 65**

Authorware 3.0

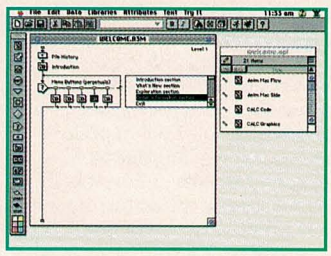
What is it? Working demo
Where you'll find it: Demos folder
Mac: 68030, 25MHz processor, 8Mb free RAM
PowerMac: any processor, 8Mb free RAM
Requires: System 7, 5Mb hard disk space, 640 x 480 screen, 256 colours

Authorware is one of the top multimedia development tools available. Using an icon-based interface, you can combine elements to produce stunning interactive software. On page 94 you can read a review of the academic versions of *Authorware* and *Director*, each of which offers a cut-down set of authoring features for a rock-bottom price – as long as you can show you're a student or teacher.

Rather than being save-disabled, this demo enables you to create fully working models but they are limited to 50 icons in size. You also need to keep *Authorware* with the files you create to run them.



***FaceToon* is great example of what you can produce with *Authorware*.**


The icon-based interface makes it easy to view your project outline.

FaceToon

To show you what can be done with a project created with only a few icons, we have included *FaceToon*, a marvellous project sent in by Rochelle Lynas. If you can create your own masterpiece, why not send it in to us? We will include the best in our Readers' Corner section, and as always there'll be software prizes for the best.

To install

Double-click on the automatic installer, which will place the program files onto your hard drive.

Authorware tools

Display: displays graphics and text you create or import via a variety of effects including fades and wipes.

Motion: moves on-screen text, graphics and digital movies from one point to another.

Erase: removes items from the screen, again with wipes and other effects.

Wait: pauses the project until the user clicks a button, presses a key or a specified amount of time runs out.

Navigate: goes to the destination you specify. Provides up to ten links for navigating within a file.

Framework: provides an easy way to create navigation structures. Framework icons are like pages in a book.

Decision: determines which path to follow, based on author-defined controls such as conditional branching.

Interaction: determines which path to follow based on the user's response. Response types include hot spots and menus.

Calculation: performs functions, manipulates variables, calls external routines and jumps to other files or programs.

Map: places selected icons in a new window with its own flowline. Use maps to organise and modularise your file.

Digital Movie: plays back imported digital video sequences, including QuickTime, Video for Windows and *Director* movies.

Sound: plays imported digitised audio such as sound effects, music clips and voice-overs.

Video: plays full-motion and still analogue video sequences using a variety of controls.

Start and Stop flags: enable you to run any part of a file while authoring. Place these flags on the flowline to indicate where to start and stop running the file.

Colour: assigns colour to selected icons to easily identify and organise logic, which facilitates team authoring.

Director 4.0

To complement our review of the academic version of *Director 4.0*, we have included this demo version, so you can try out the features of this MACFORMAT Classic-awarded piece of software.

Creative Essentials

What is it? Sound samples and multimedia presentation
Where you'll find it: Demos folder
Requires: 4Mb free RAM

An adventure in sound with the *Creative Sound Demo*. Created with *Director*, this demo illustrates perfectly how sound can be used to enhance multimedia products. Also included are 20 AIFF samples from the thousands available in the full Creative Sound library.

Peak 1.10

What is it? Save-disabled demo
Where you'll find it: Demos folder
Mac: 68030, processor, 8Mb RAM
PowerMac: any processor, 8Mb RAM
Requires: System 7.1, 640 x 480 screen, Sound Manager 3.1

This sound editing software scored an impressive 86% in MACFORMAT 41. You can use it to perform complex effects on high quality stereo sound files. You can access a whole range of effects filters. Note that the demo will not work after 30 July 1997.

Multimedia treasures

Every issue, MACFORMAT brings you the best new multimedia demos around, and we have a varied selection once again:

Origins of Mankind

What is it? Interactive demo
Where you'll find it: Demos folder
Mac: 68030, 25MHz processor, 8Mb free RAM
PowerMac: any processor, 8Mb free RAM
Requires: System 7, 640 x 480 screen, 256 colours

Take a journey back to the very roots of the human race in *Origins of Mankind*. This demo version enables you to explore a small part of each of the sections of the full disc. You can see a 3D model of an ancient man, view images of a whole range of our descendents going back millions of years and take a look at the time line, from the start of our species all those millennia ago right up to the present day.

Meet the whole family, as you skip back to a time when combs and mirrors were a bit thin on the ground.

Origins is the latest disc from Maris Multimedia, award-winning publisher of top titles including the atronomy program *RedShift*. Look out for a review of the finished title in MACFORMAT soon.

You can run *Origins of Mankind* straight from the CD-ROM. These controls might prove useful while you're enjoying the demo:

To increase the music volume: PgUp
To lower the music volume: PgDn
To increase the document's volume: Home
To lower the document's volume: End

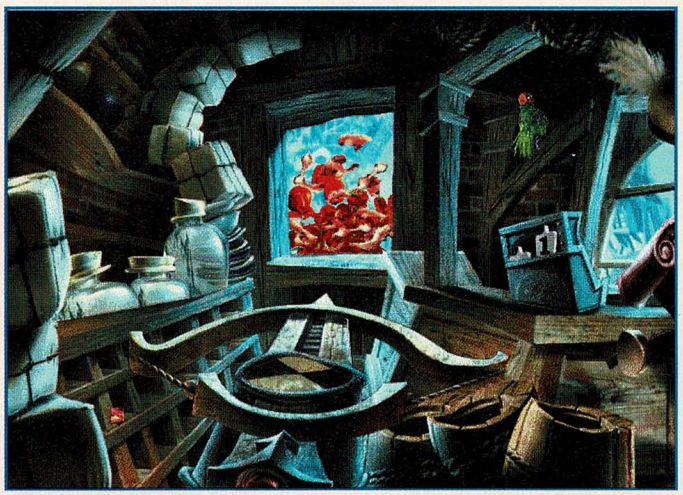
Haunted House

What is it? Interactive demo
Where you'll find it: Demos folder
Mac: 68020 processor, 5Mb free RAM
PowerMac: any processor, 5Mb free RAM
Requires: System 7, 640 x 480 screen, 256 colours

From the classic Living Books series we have *Harry & the Haunted House*, the latest Living Book to be remade for UK English rather than any other version of our mother tongue. Here you can explore the first screen of *Harry & the Haunted House*, interacting with the characters and objects which come to life with a click of the mouse. You can run *Harry & the Haunted House* direct from the CD-ROM.

Muppet Treasure Island

What is it? Interactive demo
Where you'll find it: Demos folder
Mac: 68LC040, 33MHz processor, 5.8Mb free RAM
PowerMac: any processor, 5.8Mb free RAM
Requires: System 7.5.1, 640 x 480 screen, 256 colours



In *Muppet Treasure Island*, splatting custard pies into the pirate's face seems to help the friendly store owner keep the riff-raff out of his shop.

Muppet fans will simply love this game; all the old favourites are here and there's an introduction by Fozzie Bear and Kermit.

In this demo you can explore the first screen, with clickable areas that bring the screen to life. You can also help the store keeper get back at the pirates by launching pies at them. Mind you don't splat one of the friendly tailor's customers. If this demo is anything to go by, this could be one of the most popular games of the year.

You can play *Muppet Treasure Island* direct from the CD-ROM. Use the space bar to skip past video and animation clips. ➤

Got a problem?

Before installing software from the Cover Disk, we recommend that you always back up any important work on your hard disk. This precaution will avoid problems should it transpire that any of the software isn't compatible with your set-up.

We make every effort to check our Cover Disks for compatibility and viruses, but the information here is intended as a guide only, and MACFORMAT cannot be held responsible for any damage to data, any inability to use this software or any resulting losses. So please, take the precaution of backing up first.

If your CD-ROM is defective, return it to us and we will replace it. Please make sure you have followed the installation procedures described in these pages correctly, to ensure that there is a physical problem with the disk itself. Otherwise, the replacement will give you exactly the same problem!

Enclose a self-addressed padded envelope (but we'll pay return postage) with the disk or CD, and a description of the fault. Please do not return disks or CDs to the editorial office; we don't hold any stocks of them and can only refer you to the address below.

Return faulty CD-ROMs to:
MACFORMAT CD returns
Andy Pope, Ablex
Harcourt
Halesfield 14
Telford, Shropshire TF7 4QR

We want your work!

The MACFORMAT CD-ROM needs your software – games, utilities, multimedia, artwork and whatever else you can think of. If you've got something you think is good enough for your fellow readers to enjoy, send it to us with this form (or a photocopy), plus full documentation for your program. You can send in your software on floppy disk (non-returnable) or 44Mb SyQuest cartridge (which we'll return if you include a stamped addressed padded envelope) only. We do not accept e-mail submissions for the Cover CD except by prior arrangement. Send your submission to: Disc Editor, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW.

Name .....

Address .....

.....

Postcode ..... **Daytime phone** .....

Name of software ..... **Size** .....

Checklist: ■ Include disk and printed documentation ■ Write your name and address on the disk ■ Use a virus-free disk ■ Keep a copy of your software

Please sign the following declaration:

This software is submitted for publication on the MACFORMAT CD-ROM. I grant Future Publishing and its licensees a non-exclusive worldwide licence to publish this software. It is wholly my own work, and I agree to indemnify Future Publishing against any legal action should copyright problems arise.

Signed .....

Your Floppy Disk

Great games, a typing tutor and a selection of invaluable utilities crammed onto one perfectly formed floppy disk. Colin Dalziel explains what's in this issue's collection.

Snood 1.1

The puzzle game is one genre that's never going to lose its appeal. *Tetris* remains the king of the addicitve puzzle, but it's never going to be short of worthy rivals like *Snood*, the game you get the chance to play here.

First you need to know what a Snood is. Easy – it's a face which sits on the screen. So what do you do with a Snood? That's also easy – you shoot another Snood at it.

What's the point? Well, if you get three Snoods of the same type to touch each other, they fall off the screen. And so to the object of the game: you have to try to remove all the Snoods from the screen by joining them in groups of three or more, before they advance to the bottom of the screen.

The game is more about tactics than shooting skill, although on the harder levels you have to be spot-on with your aim. A tip we've picked up in the MACFORMAT office is always to keep an eye on the next Snood you'll be firing.

Snood is shareware, which means you need to pay a $10 fee to the author if you decide to keep the game after you've tried it.

With careful shooting, match up the Snoods to clear the screen.

How to use your disk

High density floppy disks normally contain up to 1.4Mb of software, but to bring you as much as possible, we use a compression program to fit more on. So you need to decompress the software before using our Disk; this issue you'll need 2.8Mb of hard disk space.

We also recommend that you always make a back-up of the MACFORMAT Cover Disk, just in case anything goes wrong.

Installation

To decompress the Cover Disk contents, open the MACFORMAT 43 folder on your hard disk and double-click on the MACFORMAT 43 icon. You'll see a screen telling you about the compression utility we've used. Click Continue when you're ready.

A box then asks you where you want to save the software. Choose the place on your hard disk where you want everything stored, and click Save to get this issue's programs.

Got a problem?

If your high density disk is defective, return it to us and we will replace it. Please make sure you have followed the installation procedures described in these pages correctly, so that you're sure there is a physical problem with the disk itself. Your replacement will be just the same otherwise!

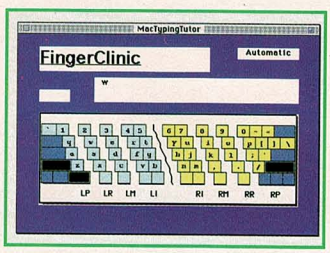
Enclose a self-addressed padded envelope (we'll pay return postage) with the disk, and a description of the fault. Please do not return disks to the editorial office; we don't hold any stocks and can only refer you to the address below.

Return faulty HD disks to:
TIB plc, TIB House
11 Edward Street
Bradford, BD4 7BH

MacTypingTutor

Learn to touch-type with the help of this easy-to-use tutor. Just follow the on-screen commands and you'll be typing at full speed in no time.

There are basic exercises which help you to learn the positions of the keys. Then it's on to typing out a selection of words. There are also typing tests which display your speed in words per minute, showing you how your skills are improving.



No cheating by looking at the keys or you'll never perfect your technique.

Disk extras

Along with *Snood*, *MacTyping-Tutor* and *Vivarium* (see page 9), there are six other programs on the MACFORMAT Cover Disk this issue:

NS-Tower 2.0

Requires: System 7, 640 x 480 screen, 1.5Mb free RAM

This is a simple but addictive game in which you control a man who can't stop walking. As he goes on his merry way, you make him jump in the air. Holding down the mouse button starts a power meter; you must release the button when the meter reaches its peak. Let go too soon and the power level won't be high enough to get you anywhere; too late and the power will have drained away.

Cover Disk utilities

You'll also find a collection of useful utilities to help you get more from your Mac:

■ With *Aliassistant* on your Desktop, you only have to drag an application icon onto it to create an alias in your **Apple** menu. Now you can access your programs without searching through your folders.

■ We have two clever Extensions in the shape of *Smart Scrolls 1.01* and *SmartDelete 1.0*. *SmartScrolls* adds a small box in your scroll bar, telling you how many pages are left in the document you're scrolling through. *SmartDelete's* keyboard shortcuts enable you to delete whole words forwards or backwards.

■ *Voldeps 1.5* is a powerful utility which gives you a set of useful features: you can change the sound volume of your Mac with a simple key combination, you can also change the colour depth of your monitor with other key selections, and just for good measure there is a built-in screen saver.

■ *Yank 1.3* is a great program to help you tidy up your Preferences folder. It works by scanning the Preferences folder, alerting you if it finds items which have no matching applications on your hard disk. So all those applications and demos you stopped using last year will be cleared out once and for all. **MF**

The man won't stand still for a second as you jump from one platform to another to climb *NS-Tower*.

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has never been easier

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So, if you really want to get stuck into the Web without getting tangled in it, talk to Adobe. Call 0181 606 4001 NOW or contact your local reseller.

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Check out the latest news and information, 24 hours a day.

You'll need a modem and an Internet Service Provider account, or a direct connection through work or college, to access the Internet. Next you'll need a Web browser such as *Netscape Navigator* – then you're ready! Just direct your browser to http://www.futurenet.co.uk/ to receive your welcome to FutureNet.

MACFORMAT ON-LINE

MACFORMAT ON-LINE is the Web arm of the magazine you're reading right now. We offer regular news updates, along with reviews, how-to's and features – plus a few special treats. It's all organised into an easy-to-navigate structure that enables you to find the information you want quickly.

To see MACFORMAT ON-LINE, just point your Web browser at http://www.futurenet.co.uk/computing.macformat.html/

Your Web pages

Whatever your Mac obsession, Richard Hill's got a Web site for you. This issue he brings you some handy jumplists, as well as the best from Apple's own site.

Top Five Mac Resources

The Web is packed with sites devoted to the Mac and the people who use it. Web pages like MacintoshOS.com (left) offer essential information whenever you need it. These are some of the top pages that we at MACFORMAT consult on a regular basis; each is worth bookmarking and visiting frequently to check out what's new.

Name	Web address
DTP Internet Jumplist	http://www.teleport.com/~eidos/dtpij/dtpij.html

A Web site specially for designers – pointers to discussion groups, fonts and hints and tips for layout artists.

Name	Web address
MacintoshOS.com	http://www.MacintoshOS.com/index.shtml

A gigantic compendium of chat, shareware and general information about the Mac, including all the things you could ever want to know. Check out the overview of all the Macs that have ever been released.

Name	Web address
MacInTouch	http://www.macintouch.com/

Daily updates on developments in the Mac community – bugs, fixes, rumours and inside information.

Name	Web address
MacSurfer's Headline News	http://www.dentalsite.com/macvantage/macsurf/

Not a news site itself; rather a bang-up-to-date index of the latest Mac news that's stored elsewhere on the Web.

Name	Web address
The Ultimate Macintosh	http://www.futurenet.co.uk/computing/macformat/umac.html

Want to find the latest Web pages dedicated to the Mac? This comprehensive guide lists 'em all.

The Pick of Apple

Not only is Apple Computer on the Web, but its site is one of the most popular commercial sites within the whole system. Start at the Apple home page (left) and explore the different services Apple has to offer. Here is just a taste of the entertaining and useful areas that you can find from within Apple's pages.

Name	Web address
Apple Computer Home Page	http://www.apple.com/

The gateway to the enormous world of Apple. Use this site to discover the latest in ideas and technology, including *Cyberdog* and Live Objects (For more information on Live Objects, see News, MACFORMAT 42).

Name	Web address
Cyberdog	http://cyberdog.apple.com/

Cyberdog can change the way you use the Internet – and it's free! This is where you can find out more about *Cyberdog* and the OpenDoc system it relies on, then download the program for your own use.

Name	Web address
Developer World	http://www.devworld.apple.com/

Even if you're not a professional software developer, this site has so much technical information about the Mac it's well worth a visit. Dig up specifications for the Mac family, read background information on System software, and much more.

Name	Web address
QuickTime	http://quicktime.apple.com/

After you've installed the latest version of Apple's QuickTime video software (on the MACFORMAT Cover CD last issue) or got hold of the new plug-in for *Netscape*, you can come here to take advantage of loads of sample movies.

Name	Web address
Personalized Internet Launcher	http://myhome.apple.com/home/welcome

Now you can create your own Web page, listing all your favourite sites as a launch pad to the Web. This page shows you what you can do, as well as telling you how to get started on your first project.

what if your PC could see?

Producing professional-looking materials would be a doddle. Perfect presentations, a piece of cake. All because you got an Agfa StudioStar.™ A fast, high-resolution colour scanner that does more than just take your business documents and reproduce them with sharp clarity in seconds. Its selective colour correction software lets you control your colours. The character recognition software will save you hours of retyping. And it lets you copy and fax. StudioStar even gives you the ability to prepare colour documents, transparencies and slides. Now nothing stands between you and the perfect document. Except your imagination.

StudioStar

One-pass scanning, optimum colour and 600 x 1200 dpi resolution, 30 bit. Adaptec PC SCSI card. Software for Mac® or PC: Agfa Scanner CD with FotoLook,™ FotoSnap,™ FotoFlavor,™ and FotoTune™ (colour management software), IT-8 reflective colour calibration target, SOFT copy,™ OmniPage™ Limited Edition CD and Photoshop™ LE CD (image editing software). Optional transparency module and Automatic Document Feeder available.

SnapScan

One-pass scanning, push-button ease, 300 x 600 dpi resolution, 24-bit. Adaptec PC SCSI card. Software for Mac® or PC: Agfa Scanner CD with FotoLook™ and FotoSnap™ (scanner driver software), FotoFlavor™ (selective colour correction software), SOFT copy™ (Fax-Copy-Print utility), OmniPage™ Limited Edition CD (OCR software), PhotoImpact™ SE CD and Color It!™ (image editing software). Optional transparency module and Automatic Document Feeder available.

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New timetable for Mac OS 8 ■ New PowerBooks at last ■ Closer integration with the Net ■ Stopping the copyright pirates ■ News Editor: Richard Hill

MACFORMAT NEWS

Introducing Mac OS 8

Regular updates herald Mac OS 8

You will be getting features from Mac OS 8 before the delayed next generation of the Mac operating system finally appears. Apple may not be able to release the full version of the new System until 1998, but this admission is part of a more sober plan to bring you new technologies for your Mac as soon as possible, rather than making you wait longer for one giant release.

Apple intends Mac OS 8 to be a state-of-the-art system which exploits the power of the latest Mac computers to the full, with features such as multi-tasking (making your Mac's processor share time between several programs running at once) and memory protection to avoid bringing your whole Mac down when one program crashes. Unlike previous System versions, Mac OS 8 is split into tiny individual modules, or micro-kernels, which collaborate to run your Mac. This will make the System much easier to update in years to come, because Apple will be able to unplug one micro-kernel and slot in another, confident it will work with its partners. But while rewriting the System from the bottom up, Apple still has to try and ensure it works with any programs written for the current System 7.

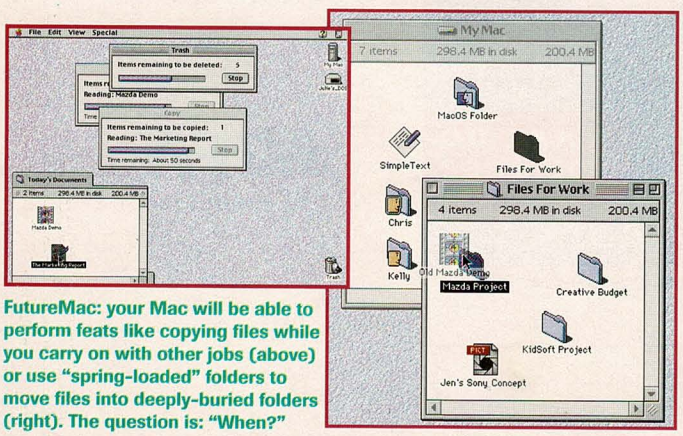
The schedule for the Mac OS 8 release has consistently been put back, so it is now years overdue. The arrival six months ago of new Apple boss Gil Amelio prompted a hard look at the Mac OS 8 situation, with Amelio requesting a list of parts of the system that are ready for use now or can be produced sooner than the core code.

The new plan, unveiled in part by Amelio at August's Macworld Expo (as we reported in last issue's report from Boston), was decided upon only days before the show. Amelio and Apple research head Ellen Hancock took the decision on the new strategy together. A precise list of the dates by which you can expect to see particular parts of the system is still being worked out.

Four times a year

The overall plan has been fleshed out more recently by Apple's Jim Gable, one of the AppleSoft division responsible for producing the OS. It involves more frequent releases of the Mac OS than you'll have been used to. Look out for a complete revision of System 7.5 in January – a new version that you'll receive as a complete package, rather than the periodic Updates featured on the MACFORMAT Cover CD and on the Internet. (System 7.5.3 was the most recent, free with MACFORMAT 39.) As it's a full copy of the OS, it's likely you'll be charged for it, as you were for the first releases of System 7 and 7.5, although it will of course go on all new Macs released from that point.

Component software system OpenDoc will be the most prominent part of January's new Mac OS and will be fully incorporated into the OS for the first time, rather than as a sub-system you have to drop into your System Folder.



FutureMac: your Mac will be able to perform feats like copying files while you carry on with other jobs (above) or use "spring-loaded" folders to move files into deeply-buried folders (right). The question is: "When?"

Mac 97: coming up

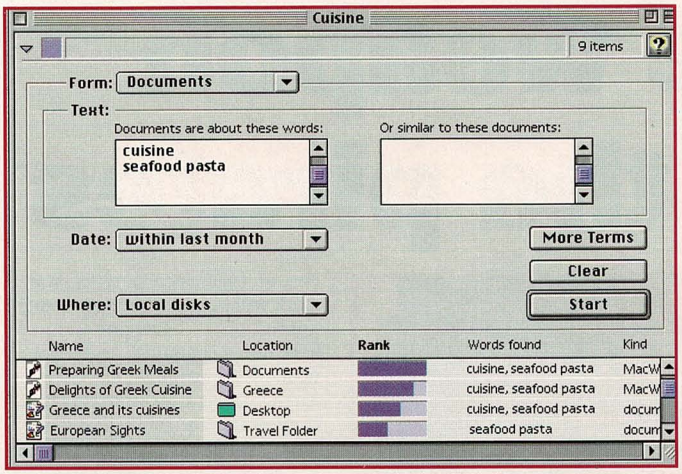
What you might see in 1997's Mac OS releases:

PowerFinder: For the first time, the Mac OS's Finder may work on your PowerMac as a fully PowerMac-native system, rather than making it pretend to be a slower 68K Mac as at present. Watch that Mac fly!

Spring-loaded folders: You'll be able to move a file into a deeply-buried folder with ease, because folders will open automatically when you move the file over them, even as you move through several layers.

Pop-up tabs: Convert any folder window into a slim tab in the style of a file card, then leave it at the bottom of the screen to keep things tidy. Double-click on the tab at any time to open up the full folder window.

Super-searching: V-Twin is a high-speed searching system already used by *Cyberdog*. Summer '97 could see it become part of the Finder.



A future release of the Mac OS will give you a new, powerful search system similar to this. You'll be able to look for key words within all your documents.

QuickTime 2.5 and the latest Open Transport, Apple's communications systems, will also be included.

The next major release following that is now scheduled for July 1997, when you should see some of the features originally earmarked to appear only in the full Mac OS 8. AppleSoft is now looking at which technologies don't depend on the core of Mac OS 8 to run (see the "Mac 97" box). One of these releases will include enough new code to warrant a new label, which is when you'll finally see Mac OS 8.

Between these major releases, set to appear twice a year, you should expect more traditional System Update releases, also on a twice-a-year timetable. These will correct any minor bugs and add the newest versions of sub-systems such as QuickTime and OpenDoc.

Be attracts spotlight

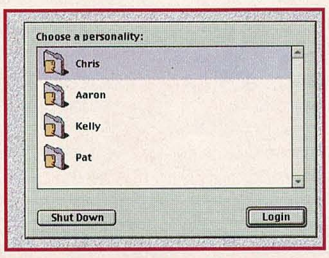
Another firm's operating system is attracting a great deal of attention at the moment, highlighting some of the difficulties Apple is trying to overcome with its new strategy. The small Be company has become the subject of takeover rumours after the huge impression it made at August's Expo in Boston (see last month's news) – perhaps as a reflection of the frustration felt at the latest delays for Mac OS 8.

The BeOS is an alternative operating system which currently offers many of the features Apple promises will appear in Mac OS 8, such as multi-tasking. At Expo, Be announced that the BeOS is to be converted to run on the PowerMac as well as the firm's own BeBox computer. Be is encouraging companies to write software that would work under the BeOS, but so far no-one seems ready to purchase the new System.

Following the announcement, the influential business paper *The Wall Street Journal* claimed in late August that Apple was in talks with Be about buying the company. The *Journal* admitted that these talks could also be about nothing more than developing the already-announced moves to bring the BeOS to the Mac as a new independent OS. But the article still prompted heavy speculation among Mac developers that Apple planned to build Mac OS 8 on top of Be's existing, efficient code – or even ditch its own Mac OS 8 and release the BeOS under that name instead.

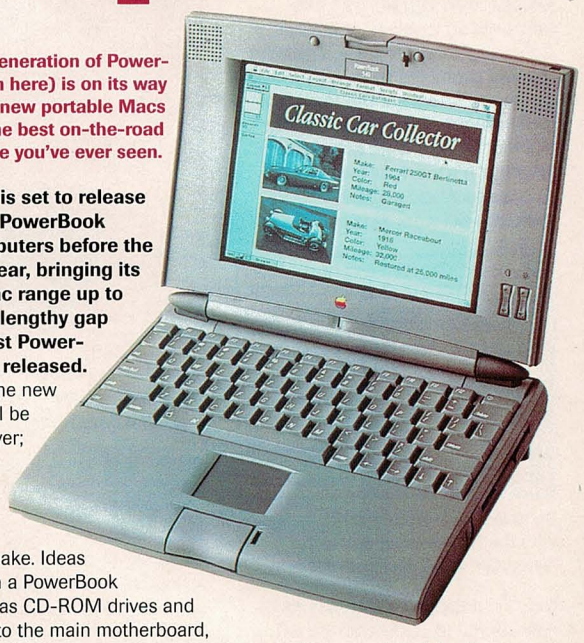
No-one but Apple and Be really knows what's happening, of course. But Be boss and former Apple employee Jean-Louis Gassée said he was "distressed that the story creates confusion". He maintained that Be's plans were no more than they seemed, and that Apple and Mac OS licensee Power Computing were both giving strong support in the conversion process.

That Be could write in months an OS that delivers what Apple has been promising for years highlights the hurdles Apple faces on the road to Mac OS 8. Be has a strong, modern OS – but so far there are no programs you can use on it. Apple's Mac OS has thousands of programs, which is one of the main reasons why Mac OS 8 is proving such a problem. Apple needs to keep all your existing programs working healthily under Mac OS 8, otherwise the advantages for developers, users and Apple itself of having millions of people enjoying the Mac OS today are lost.



If you share your Mac with other people, you will each be able to start up using your own settings.

Innovative design from new portables



The old generation of PowerBook (shown here) is on its way out. Brand-new portable Macs will offer the best on-the-road value you've ever seen.

Apple is set to release new PowerBook computers before the end of the year, bringing its portable Mac range up to date after a lengthy gap since the last PowerBooks were released.

Prices of the new machines will be lower than ever; improved technology makes the PowerBooks cheaper to make. Ideas never seen in a PowerBook before, such as CD-ROM drives and easy access to the main motherboard, will appear in these new machines.

The line of PowerBooks, expected to go on sale at the end of October, will be based on the PowerPC 603e chip used in the current Performa range (see last issue's guide to the new Macs), although it will run at the slower clock speed of 117MHz, compared with the Performa's new minimum of 160MHz. Some PowerBooks will come with a 6x CD-ROM drive, enabling you to use multimedia on the road for the first time. The bay that stores the CD drive will also accept specially-made hard drives or Zip drives, for example. You can also expect to see machines with a minimum of 12Mb of RAM and a 750Mb hard drive installed.

Imaginative design features will include a removable keyboard so you can access your PowerBook's RAM sockets and processor in less than 30 seconds. This will be handy because the processor is removable, enabling you to upgrade to a faster 603e chip when it becomes available. The outside of the case will include a plastic insert sleeve, enabling you to customise the look of your computer by sliding in a printed design of your choice. This is useful for firms with sales teams on the road with PowerBooks – or just for fun – but other uses for the sleeve could include ideas like a solar panel – useful if you wanted to extend the life of your PowerBook's batteries.

Despite all this, the PowerBooks' prices may well be their most startling feature. There are hints from Apple that prices may fall up to 33%, compared to the current top-of-the-range PowerBook 5300, bringing the prices of even the most powerful machines below £3,300 – and much less in other cases. The price drop is largely due to cheaper screen technology, with a state-of-the-art 11.3-inch flat screen, capable of showing 800 x 600 pixels, now much cheaper than we've previously been used to.

Look out for precise details of the all-new PowerBook range soon. ➤

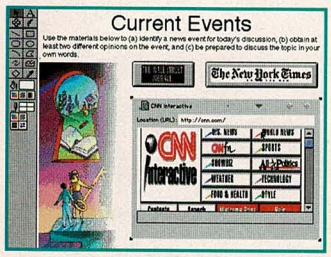
What's your view?

Now that Mac OS 8 is delayed once again, are you happy to wait if it means you can use all the software you already own? Or would you be prepared to start from scratch with your software collection if it meant you could get all the features of Mac OS 8 much sooner? And now that Mac OS 8 is undergoing a rethink, what new features would you like Apple to include in the OS? Tell us what you think about Apple's Mac OS plans. Write to: "Mac OS 8", MACFORMAT, Future Publishing, 30 Monmouth Street, Bath BA1 2BW.

Netscape links with Cyberdog

There's going to be a new version of the ubiquitous World Wide Web browser *Netscape Navigator*, this one tailor-made to work with Apple's *Cyberdog* Internet suite. The new release promises to make it easier for you to integrate the features and content of the Internet with the rest of your Mac activities, whether it's work or leisure.

The new *Netscape Navigator for Cyberdog* will work as part of Open-



Build live Web links into *ClarisWorks* with the forthcoming *Netscape Navigator* and *Cyberdog* team-up.

Doc, the component software which enables you to create customised documents incorporating mini-programs that could be anything from word processors to graphics editors (see last issue's News).

You'll be able to use *Netscape for Cyberdog* with all OpenDoc-friendly programs. Imagine linking it to a spreadsheet pie chart, so the chart can change as *Netscape* downloads new statistics. The release date for this new software is still to be set.

Image weapon stops the pirates

The new *Imagemarc* system embeds coded information within a picture, making it easy for you to establish that it is your original work.

New software set to be incorporated into some Mac programs means it could soon be easier to catch people who copy artistic material without permission. *Imagemarc* is a system that enables you to build a copyright notice into any image you create, which cannot be seen without specialist software and can't be removed by anyone except you.

This means that if an image is reproduced without your permission, you can prove you were the original creator. In an age where the presence of scanning and digital image technology means you can make a perfect copy of a digital image, the idea could prevent a great deal of previously unstoppable image theft.

Every piece of creative work – a picture, magazine article or television program for example – is automatically copyright, so that it's illegal to copy or reproduce a painting or drawing, for example, without the permission of the artist or owner. But the growth of the Internet, along with the tumbling prices of scanners, means that thousands of illegally-scanned images are now freely available.

The *Imagemarc* notice is in the form of an invisible watermark which can only be detected with specialised software. The system's creator, Digimarc, claims the watermark will survive the image being printed, photocopied and scanned back into a computer. And if you wanted to swamp the mark with special effects and distortions, you'd have to apply so much that the image would virtually become useless anyway. Adobe is the first firm to employ the *Imagemarc* system, offering it in its latest version of industry-leading image editing program *Photoshop* (see What's New, page 21).

Imagemarc works with "noise" – the random variations in colour and detail you always find in a photo, even once it's been scanned into your Mac. The software weaves a message of your choice throughout your image, using the noise to disguise the digital format it employs for the message.

This does mean that if you've made the entire image on your Mac (for example, a *Bryce* rendering), you can't build in a watermark – there just isn't sufficient noise to hide it in. Nevertheless, *Imagemarc* may change attitudes towards digital artwork, making people see it as something as inviolable as a novel or original illustration.

Zoombinis

In MACFORMAT 41 we reviewed *The Logical Journey of the Zoombinis*, but gave the incorrect contact number. For further details you should call Brøderbund on 01429 273029.

Macs help in 999 crises

TraumaLink can save paramedics crucial time at an accident scene. (No cyclists were harmed during the making of this photograph!)

A combined project from Apple Computer and phone giant BT could help save lives if current tests work out. TraumaLink places the power of digital video into the hands of ambulance paramedics and hospital emergency departments.

Arriving at the scene of an accident, one of the ambulance personnel can use an Apple QuickTake digital camera to record clear images of any casualties and the nature of their injuries, along with information which can be difficult to get across in a radio message, such as the position the casualty is in. The images are automatically sent to a PowerBook 5300 kept on the ambulance. The PowerBook can then transmit the images back to the casualty department over a high-tech cellphone line. Staff at the hospital can view or print the pictures using their own Mac. For its operators, the whole procedure is simple but effective.

The Norfolk and Norwich Hospital is carrying out trials with the system. Bruce Finlayson, one of its Accident and Emergency Consultants, says, "We usually have to wait for the patient to arrive before we can fully assess the extent of injuries and plan treatment – vital time which can be saved if we have a picture of what happened." Other possibilities the trial will explore include using TraumaLink in reverse, enabling the hospital staff to relay essential advice back to the paramedics on the scene where necessary. MF

Capture and Create with Casio's QV-10A Digital Camera for only £349.99* (ex.VAT)

Shoot ▶ **Review** ▶ **Edit** ▶ **View**

Open up your computer's imaging potential with the brilliant Casio QV-10A Digital Camera. Probably the most exciting development in computers since the floppy disc, the digital camera allows you to input any image you want directly into your computer for inclusion in unlimited types of applications.

With it's built-in LCD screen the Casio QV-10A is easily the most versatile and easy-to-use digital camera on the market. You can see the image on screen before shooting, review any of the 96 images instantly and even delete those you don't need to free up memory. It's just one reason why the QV-10A has already proven to be so popular amongst computer users and why The Mac magazine awarded it 'Editors Choice' and Computer Life a 5 star 'BUY IT'.

QG-100 prints direct from the QV-10A

At work or at home the QV-10A makes producing more impactful presentations so easy. Include images in your letters, reports, leaflets and club newsletters. Build your own photo album or visual database, even add images to faxes and e-mail or illustrate your internet pages. Images can be saved as Bitmap, PICT's, TIFF's or in Casio's own CAM format and imported into virtually any graphics, word processing or presentation package and even into an Excel spreadsheet. You can also plug the QV-10A into a TV to display images making it the perfect presentation tool.

Link the QV-10A directly to the new QG-100 Printer and you can produce quality, adhesive mini colour prints without the need for a computer. The QG-100 costs just £199.99** (ex.VAT)

With a stunning array of features including multiple 1, 4 or 9 image display, Macro lens, Self timer and 270° rotatable lens the QV-10A at just £349.99* is quite simply the best value Digital Camera available.

The QV-10A package includes either PC or Mac connection kit, video lead, batteries, case, cleaning cloth and instructions. The Casio QV-10A is a truly exceptional addition to your personal and business communications.

For details of your nearest stockist telephone the Casio QV-10A dealer hotline... 0181 893 2592

CASIO®

http: // www. casio. co. jp

*Retail Price Guide £349.99 ex.VAT (£411.24).**Retail Price Guide £199.99 ex.VAT (£234.99).

All screen and print images shown are simulated. The quality of the actual images produced will be of a lower resolution.

Casio Electronics Co.Ltd., Unit 6, 1000 North Circular Rd., London NW2 7JD. Tel: 0181 450 9131. Fax: 0181 452 6323

Available from Action, Argos, Great Universal, Harrods, HCS Global, Inmac, Innovations, Jessops, Misco, Novatech, Powermark, RS Components, Selfridges, Silica, Software Warehouse, Techno, Technomatic, Viking, Watford Electronics, Branches of The John Lewis Parnership, PC World and selected branches of Dixons and Boots plus all good photographic and computer stores.

Adobe's new versions of *Photoshop* and *PageMaker*. Plus: 3D adventures, *QuicKeys* and a new version of *Strata Studio*. Compiled by Richard Hill.

PageMaker 6.5

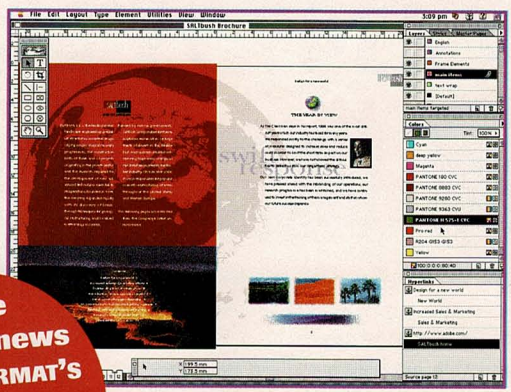
Adobe's rival *QuarkXPress* may still be the desktop publishing package most firms rely on, but *PageMaker* becomes more compelling with each succeeding release. Version 6.5 continues the trend with more state-of-the-art additions to the basic feature range.

PageMaker enables you to both assemble and design documents, as well as prepare them for publication. One of *PageMaker's* most distinctive facets is that it offers features recognising the fact that your publication could be intended for the World Wide Web, as well as (or instead of) paper. You can export a *PageMaker* document as Web-standard HTML code, change type sizes into one of the six HTML heading sizes, and convert images into GIFs or JPEGs, ready to display on the Web. You can even set up and test links to other Web pages while you're creating the document in *PageMaker*.

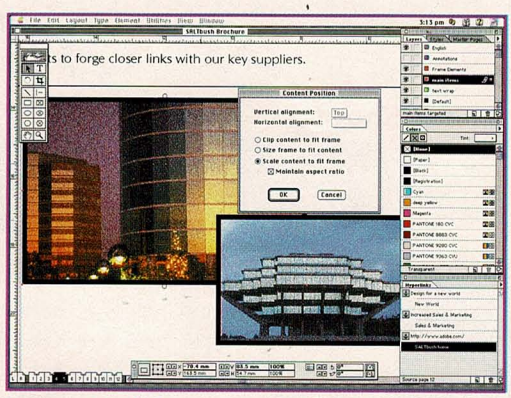
More product news in MacFormat's new Buyer's Guide, starting page 131

Changing the way you work within *PageMaker*, the new version offers text and graphic frames that you can place on the page before dropping in material – a familiar convention if you've used *QuarkXPress*. But *PageMaker* moves beyond this to automate the layout process, at least partially. You can set the program up to reflow text, change the size of graphics, or even move objects automatically when you change design elements like margins, page sizes, or the number of columns you use.

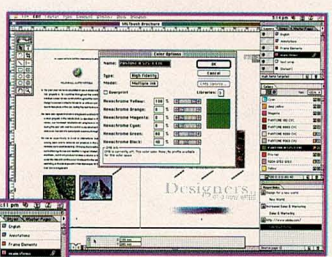
PageMaker 6.5 adopts the concept of layers used so successfully in image editors like *Photoshop* and *xRes*. You can place elements of your page design in several layers, then switch layers on or off as you try out ideas or designs for both print and the Web. You can also lock individual layers to protect essential page elements.

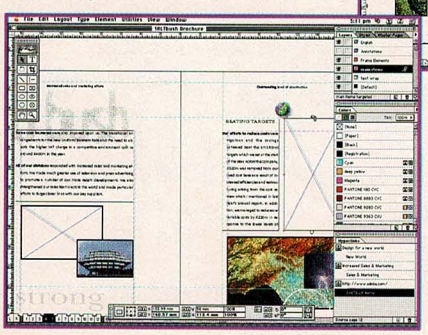


PageMaker 6.5 adopts *Photoshop's* layer system, giving you more flexibility.



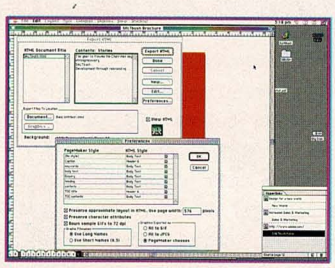
The new *PageMaker* sports a redesigned interface to bring it into line with other top Adobe programs.





PageMaker 6.5 offers a variety of colour matching features for creating documents ready for professional printing.

You can mix *PageMaker's* traditional boxes with *QuarkXPress*-style text and picture frames to work the way that suits you best.



Features for creating Web pages are closely integrated into *PageMaker*.

Price: TBA. Out: Autumn 1996. Contact: Adobe on 0181 606 4000.

New in PageMaker 6.5

- **New interface: the look and feel of *PageMaker* is being brought into line with other Adobe products like *Photoshop*.**
- **Importing text: Extra filters mean you can import text directly from *ClarisWorks* and *Microsoft Works*.**
- **More plug-ins: companies are being invited to create plug-in software that will expand the number of features you have available to you in *PageMaker*. Look out for these soon.**

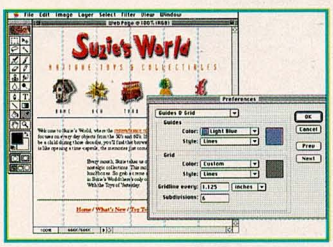
Photoshop 4.0

It's one of the best-known programs on the Mac, so a face-lift for Adobe's *Photoshop* image editing program is bound to draw attention and invite comment. *Photoshop* is a mantra for some, a program you use for many hours at a time and get to know intimately, so any changes risk invoking the wrath of its 2.1 million users.

Like companion program *PageMaker*, *Photoshop* has a redesigned interface so moving between Adobe programs is easy.

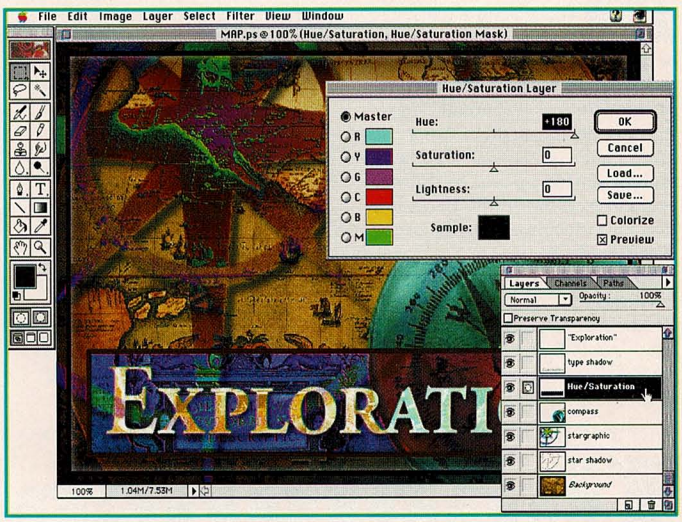
The key areas of *Photoshop 4.0* remain its image editing and manipulation features, enabling you to take an existing image and modify it. Changes can be of the most subtle kind or the most extravagant, making *Photoshop* the most suitable image editing tool for all occasions.

The most obvious changes are also the most likely to raise your hackles if you're a *Photoshop* devotee. Changes range from a new approach to layers, right down to alterations in keyboard shortcuts for much-used functions. Standardisation is Adobe's motivation for these changed menus and palettes; the new feel will form a core that will remain consistent across the firm's whole line of graphics software, so you'll be able to switch from *Photoshop* to *Illustrator* to *PageMaker* without missing a beat, once you're familiar with new versions.

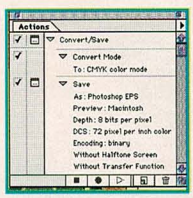


Adopting a feature familiar to DTP users, *Photoshop 4.0* offers guide lines so you can line up elements.

One of the essential areas of *Photoshop* you should master is its use of layers, placing separate elements of an image on different levels so you can work with each individually. The **Layers** palette has been overhauled to make these functions more powerful, and now there's a **Layers** menu so you can access key features more easily. If you isolate a piece of your image to work on, *Photoshop 4.0* creates a new layer for it, protecting the rest of your work from unwanted changes. The **Merge Down** command means you can simply drop your selection back within the image when you're done. The new **Adjustment Layers** are levels where you simply alter aspects like colour balance, brightness and contrast, with the layer affecting any lying beneath it. You can experiment with different set-ups, but still ditch the layer without wrecking your work.



Now an essential part of using *Photoshop*, the Layers features now include Adjustment Layers for overlaying colour correction effects.



Photoshop's Actions palette enables you to set up automated activities for the program to complete.

One brand-new feature sure to go down well with busy designers is the **Actions** palette, a set of controls that enable you to record a sequence of actions and modifications to a *Photoshop* document, then save it to apply to any file. For example, you could plug in a digital camera full of shots, then load the files automatically into *Photoshop*, adjust the colour balance on each and save it to your hard drive – all while you're making the tea.

Improvements in speed will be just as welcome. In particular, you'll be able to work with large files more quickly, with faster zooming and scrolling around an image. And if you have a multiple-processor PowerMac, such as the new 9500/180MP (see MACFORMAT 42's huge guide to new Macs), you'll get even more performance from *Photoshop 4.0's* new MP support.

Price: TBA.
Out: Autumn 1996.
Contact: Adobe on 0181 606 4000.

New in Photoshop 4.0

- **Guides and grids: line up elements on different layers by pulling a guideline from the on-screen ruler.**
- **Filters: 48 new effects filters more than double the total and include natural media effects, like watercolour and pencil.**
- **Web formats: *Photoshop 4.0* enables you to create Progressive JPEG files, tailor-made for *Netscape Navigator*, as well as common formats like GIF.**
- **Web link: connect to the Adobe home page at the touch of a button to get updates and plug-in software.**
- **Protect your work: digital watermarking from *Imagemarc* software means you can build in personal information like a copyright notice throughout your file (see this issue's News, page 18, for more details).**

QuicKeys 3.5

Despite the Mac's menu system, which has revolutionised the way we use computers since the 1980s, keyboard shortcuts can still often be a lot easier to use. This is especially the case once you've built up some experience on your Mac.

Pressing **[command] S** rather than trawling your mouse to the top of the screen to select **Save**, for example, means you can protect your work without interrupting your momentum. The latest version of CE Software's *QuicKeys* macro maker takes this concept and builds on it further, offering the ultimate in labour-saving devices.

With *QuicKeys 3.5*, you can record entire sequences of actions you make on your Mac, then save and reproduce them as a single keyboard shortcut or click of the mouse button. The latter option is open to you thanks to toolbars and floating palettes that you can keep on-screen. These contain triggers for sequences that will work either at any time or only while you're using a chosen application.

There's also a batch processing feature, which enables you to execute the same saved *QuicKeys* sequence on all the files you've placed in the *QuicKeys* source folder – so you can process dozens of files with one button press.

While you could also do these types of jobs with something like the AppleScript system, *QuicKeys* is designed to be as easy to use as possible, with an improved sequence set-up and editing facility. Editing features include a debugger that monitors and reports on sequences as they're executed, so you can easily identify errors in your more complicated recordings.

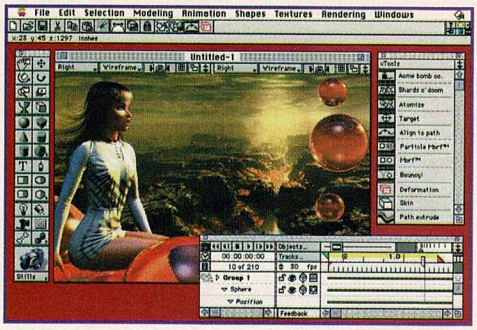
Price: £94. Out: now.
Contact: Computers Unlimited on 0181 200 8282.

Strata StudioPro 2.0

Many 3D artists' software collections already feature *Strata StudioPro* at their heart, thanks to the way the program enables you to create 3D models and add texture and lighting details to them. Now more than ever, *StudioPro 2.0* is a tool for setting up and recording sequences of masterful 3D animation for video, multimedia, or the World Wide Web.

Once you've created your environment – with the aid of new effects like realistic smoke, fire and hair – you'll find a heavily revamped set of controls to create animations. There's a host of new camera controls, including **Auto-panning** to follow an object as it moves through your world, and **Zoom, Pitch, Yaw** and **Roll** to add excitement to the experience. You can control the way your object moves with motion constraints that accurately simulate real-world physics.

Key multimedia technologies like QuickTime 2.5 video and QuickTime VR and VRML virtual reality systems are built into *StudioPro 2.0*, so you can easily convert your environments then work on them in other programs, or place them on to the Web or CD-ROM. And you can also save your files as QuickDraw 3D, which means you can bypass compatibility problems, and take them straight into almost every other major 3D program.



Strata StudioPro 2.0 **builds on the program's multimedia and animation pedigree to become a more complete 3D system.**

Price: £1,169.
Out: now.
Contact: Principal on 01706 832000.

Timelapse

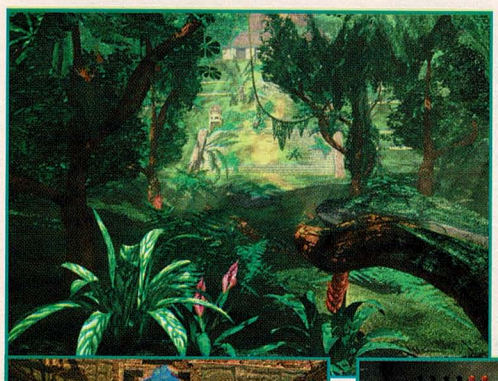
Do you believe in Atlantis? Archaeology professor Alexander Nichols has been searching for the legendary fount of civilisation and makes a breakthrough as you join the story in Philips Media's two-CD adventure *Timelapse*. As a colleague of Nichols, you respond to his call to meet him on Easter Island, only to find he's vanished. His journal and a collection of photos taken with an instant camera are all that remain to offer clues to this whereabouts. But you won't believe where he's been.

You'll find your colleague has already been to places like ancient Egypt; but what's he looking for?

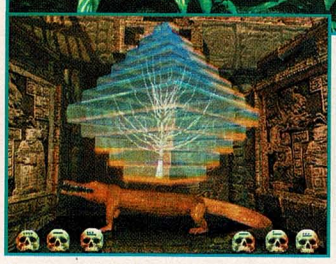
A cavern on the island conceals a Timegate, a portal to great civilisations such as the Golden Ages of the Egyptians and the Mayans. You must explore each location to discover clues to Nichols' current whereabouts as well as the secrets of Atlantis.

As you play *Timelapse*, you'll be treated to some stunning 3D graphics, and you'll find out the true stories behind mysteries like the Great Pyramids and the Easter Island statues. Which has to be value for money.

Price: £39.99.
Out: October.
Contact: Philips Media on 0171 911 3000.



Solve an ages-old mystery by travelling to ancient lands in *Timelapse*.



As you search for the lost secrets of Atlantis, you'll have to discover its ties with the Mayans and Egypt.

Timelapse **isn't just an epic adventure, oh no: you'll also have to make full use of your puzzle-solving skills.**

Blue Ice

Set for release in October, *Blue Ice* promises to be one of the most unusual adventure games of the year. Described by developer Art of Mind as "a cross between *Alice in Wonderland* and *Edward Scissorhands*", this surreal fantasy sets a challenge a cut above the typical quest.

Blue Ice **could be the most distinctive fantasy of the year.**

The land of Icia has been crippled by a succession of weak rulers, making ludicrous laws to suit their own needs rather than those of the people (ring any bells?). You are in charge of Edward, a 12-year-old prince who is set to rule Icia within a year, but whose heart is already set rigid by royal conventions that will prevent him from changing the status quo bespoiling the land – it's up to you to release the humanity buried deep inside the boy.

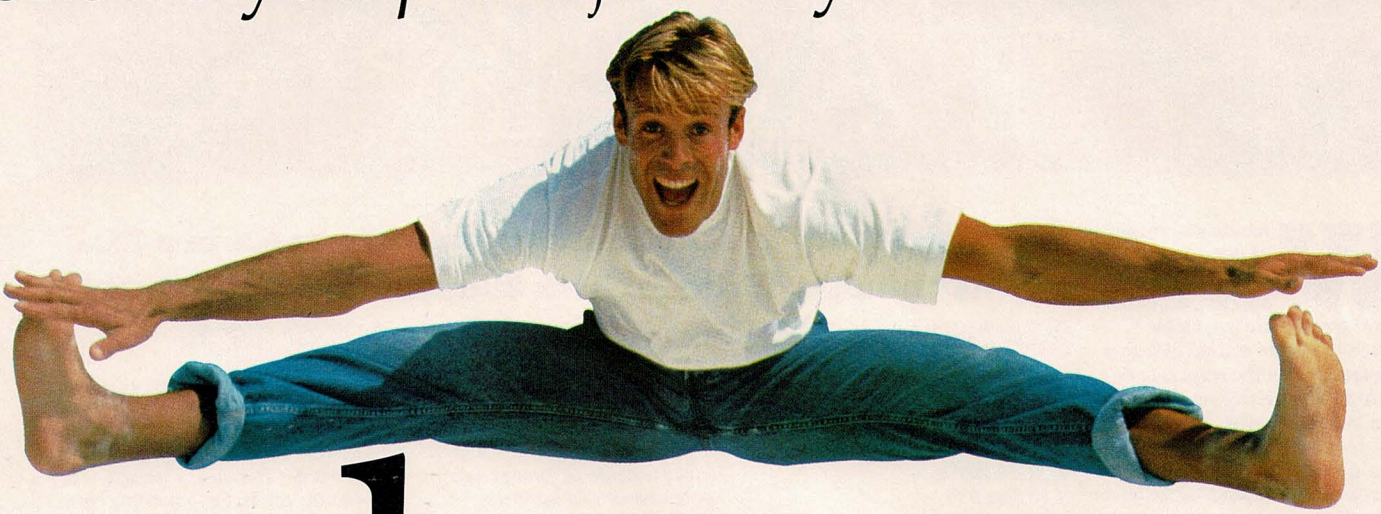
If you're to achieve your aims, you must get to know a diverse cast of characters and solve puzzles as you seek out the five colours of life that can set Edward free. Luscious illustrative graphics, and a soundtrack based on music from sources as varied as Duke Ellington and The Future Sound of London, give *Blue Ice* an atmosphere all its own.

In *Blue Ice*, you have to help a young boy grow up to become the ruler your country deserves.

The creators of *Blue Ice* acknowledge a debt to Kit Williams, the author and illustrator of *Masquerade*.

Price: TBA.
Out: October.
Contact: Psygnosis on 0151 282 3000.

Your ideas Apple Expo shows you *powerful* ways to make them



dance

Pre-register for free entry – call **0181 390 0203** and quote reference A36

or visit **http://www.apple-expo.com/apple**

Multimedia design and production demands the finest creative tools. Excellence in multimedia is what Apple technology is famous for. You'll understand why when you visit **Apple Expo '96.**

From 6th-9th November, test the best from 250 famous names, including Macromedia, Avid, Data Translation and Adobe. The latest innovations for production of all kinds of interactive media – the Internet, CD-Rom, broadcast and video – are there for you to compare. Experience the potential offered by exceptional hardware combined with the hottest new software.

Pre-register today to save £15 entry fee and receive information about what's on – **live demos of state-of-the-art solutions in the Multimedia Arena; hands-on training in Extreme 3D, Premier, Photoshop and Director 5; pioneering new software in the Apple Developers' Village and eye-opening sessions in the free Conference and Seminar Programme.**

Call the Pre-registration Hotline on 0181 390 0203 and quote reference A36 or return this coupon before 25th October for free entry and a visitor pack. If you do not pre-register by 25th October, entry is £15.

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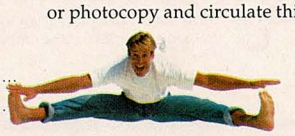

Return this coupon to:
Apple Expo '96, PO Box 231A, Surbiton, Surrey KT6 4RJ. **Or fax to 0336 406086***

*calls cost 39p per minute cheap rate, 49p per minute at all other times.

Under 16's are admitted on Saturday only.
The ruling is strictly a maximum of two children per accompanying adult.

Apple xpo 1996

6–9 November, Olympia London

Sponsored by MacUser MAC

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CODE: A36

Got something to say? Share your views and win a MACFORMAT binder. Write to: Alex Summersby, AppleTalk, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW.

What do you think of the new look that MACFORMAT is sporting this issue, then? Love it, hate it, or hadn't noticed it... write and let us know your feelings on the magazine or anything Mac-related, and if your letter is published here you'll win your very own MACFORMAT binder. (Of course, if you're not up to letter-writing but fancy a binder anyway, you can turn to page 128 and order one. But then you'll be depriving us all of your insights...)

What if...

I have often wondered what the computer world would be like if Microsoft was marketing the Mac. It is funny that everyone hates Bill Gates and his Microsoft. But what else could anyone expect that he would do? It is his religious duty to convince everyone that Windows 95 is the best operating system since God laid down the human genetic code. And how would you rate Apple's advertising campaigns in comparison? In the tidal wave of "Intel Inside" adverts, there's nary a Mac in sight.

I pay Apple my hard-earned currency for its products, and that is as loyal as I dare stretch. Nevertheless, if Apple does not know how to advertise its products, I think we long-suffering loyal citizens of Apple need to begin to pool our talent into advertising the Mac – after all, we Mac users control the media! I think the situation calls for an "Apple User Action Advertisers Group", or else we could wake one morning and – God forbid! – Apple could have gone into perdition.

Ariel Yochanan
London E17

Of course! With all the Mac users in the "creative professions", it can't fail! (And by the way: you know those Intel ads where people experience the wonders of multimedia by stepping inside their PCs? Well, word is that the animation for those ads was generated on PowerMacs. Wouldn't surprise me at all.)

"Service" providers?

Why are Macs so badly supported by Internet Service Providers? What a very good question, especially as it takes approximately 3.6 nanoseconds to become an expert at Mac-to-Internet connectivity if you have any experience whatever of TCP/IP and PPP setup on other systems.

I phoned BT Internet recently and asked them about connection; they said: "All you need is a PC and Windows 3.1 or better."

"I've got much better," says I, "System 7 on an Apple Mac."

"A what?"

"A Mac."

"Well, as long as it runs Windows 3.1 or above it will be fine..."!

This is a job for AmelioMan: get out there and tell these dimwits just how popular the Mac is and exactly how cheap it will be for them to tap into hundreds of thousands of potential extra customers!

PS My ISP – I-Way – supports Mac users: it just sends out a single disk with MacPPP / MacTCP on it and some basic instructions. Needless to say I was connected almost immediately, while my Win95 Pentium took several days to get connected.

Guy Chapman
via FutureNet

We carried out a "blind" consumer test of some of the most prominent Internet Service Providers for MACFORMAT 39 and were frankly amazed at the general lack of support for Macs, especially considering that all the surveys indicate that something like 40% of all computer users who access the Net do so using Macs. We're planning a fresh survey soon and would like to hear from Service Providers who offer Mac support. Judging by the mail we're getting already, I don't think I need to ask if other MACFORMAT readers would care to share their experiences, now do I?

Anti-American bias?

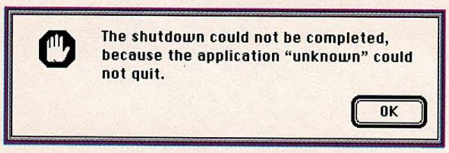
Frankly, when I read Stanley Wertheim's letter in MACFORMAT 36 I was rather on your side. Although I found it odd that you complain about disproportionate American content in American-produced reference software, I thought it fair to note the fact as a possible detriment for consumers in the English-speaking world outside the States.

But, then I read Eva Lauer's review of the *Encyclopedia of Nature* CD-ROM. "Unfortunately, *Nature* is undeniably American," she wrote. (Unfortunately?) Then she pointed out that the words "fungi" and "niche" were pronounced in the American fashion and that the word "autumn" was replaced by the word "fall."

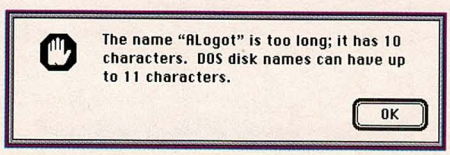
Unfortunately, I am undeniably American. Unfortunately, I am undeniably irritated with Ms Lauer's review. What, exactly, is so unfortunate about being of the United States? (Oh my! What an opportunity I have provided for humour at my own country's expense.)

Seriously, are American software developers shoving their unfortunately American products down innocent English throats? Is undesirable unfortunately American software the only software available in the UK? If you don't like the American stuff, can't you buy your own home-grown software?

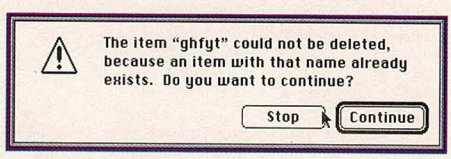
Sorry to be so irritable. Despite my present pique, I greatly enjoy MACFORMAT. Unfortunately, I think



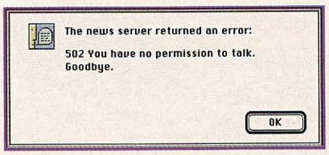
Silly Things Your Mac Says, number 446, from John Armstrong of Dundee, via FutureNet. First time I've seen an application that *wouldn't* quit – most of the ones we've ever used here in the MACFORMAT office seem to have no trouble managing that little trick, and usually "unexpectedly" at that. Has *your* Mac given you a silly message? Grab it by hitting [command] [shift] 3 and send it to us!



Guido van Mier of the Netherlands got this alert when he tried to re-format a DOS-formatted disk. "After I chose Erase," he says, "the dialogue box suggested the name of the new disk (don't ask me where it came from!). I hit OK and this message appeared. It would seem that that Mr Gates finally found his way to Macintoshes, but still hasn't quite got the knack of getting them to work for him."



Rossella Rosin sent this message by e-mail from Milan. Now that's a confused Mac! Wonder what message she'd have got if she tried deleting the *other* item of that name? And – hey, wait a minute! "ALogot" doesn't have ten characters! Maybe the error message wasn't created by a Mac at all, but by a Pentium – everybody knows they can't count. (Gratuitous anti-PC joke number 37 in a series...)



Gord Bowes of St Thomas, Ontario, Canada, sent in this screenshot of what happens when he tries to log into a newsgroup that isn't open to public. It's from the program *NewsHopper.* Curt little beastie, isn't it?

that undeniably English/Scottish/Canadian/Australian/Kiwi/Irish/Welsh (did I leave anyone out?) writers will continue to take their swings at the poor ol' USA. Ah, the burdens of leadership!
John M Harrington
Osaka, Japan

Hey, don't ask me, I'm just the token Australian. Personally, I have no problem with reference CDs sold in the UK being US-based. But then I've always been more fascinated by the Little League than by Test Matches. UK buyers, though, might like to know if they'll be getting details of the one but not the other. And for a European perspective:

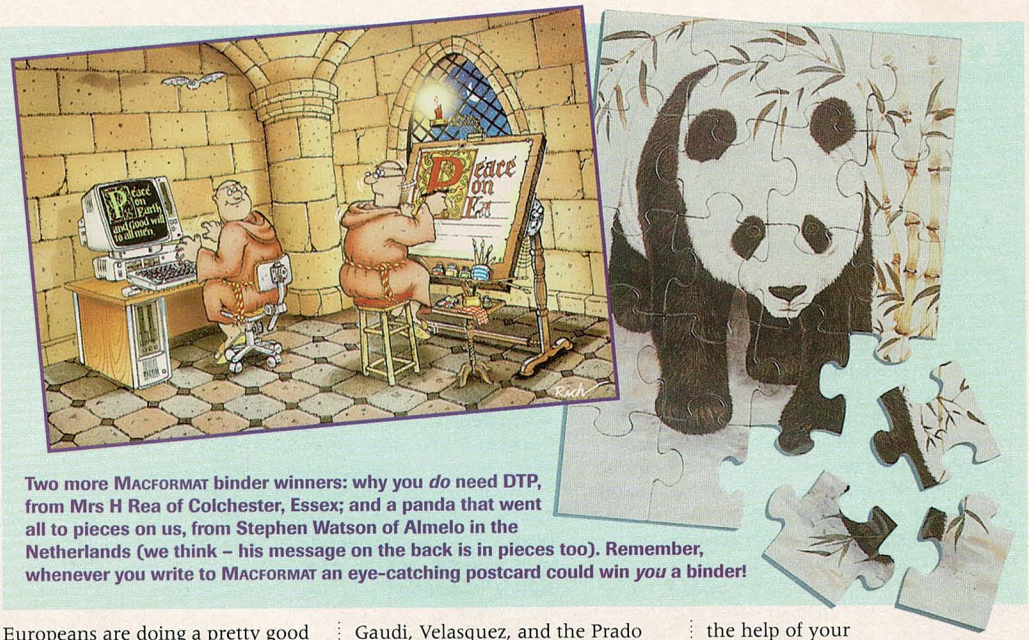
War? What war?

As a European, I am pleased to see that the Americans didn't win the war of the software on CD-ROM. They are good at games, sure, and that makes a lot of sales. But the Europeans are doing a pretty good job in science with Dorling Kindersley and culture with RMN (Réunion des Musées Nationaux).

What's more, these are all of international interest – all the Dorling Kindersley titles are available in French and we often see French products in English: *Le Louvre, Asterix, Napoléon* (amazing to see that our "glorious" Napoléon might interest English people).

My question is, what about the other European countries? I have seen three Spanish CD-ROMs about Gaudi, Velasquez, and the Prado Museum, and that's about it. Are there some German or Italian products of interest? And what about the other countries?
Pierre Ernoult
Paris

I might come to regret this, but: can any of our international readers tell us?



Two more MACFORMAT binder winners: why you *do* need DTP, from Mrs H Rea of Colchester, Essex; and a panda that went all to pieces on us, from Stephen Watson of Almelo in the Netherlands (we think – his message on the back is in pieces too). Remember, whenever you write to MACFORMAT an eye-catching postcard could win *you* a binder!

Pushing the limits

I've always looked forward to upgrading my "little" Classic II. With the help of your "speed up" articles (MACFORMAT 19, 31 and 37), I'm now at 10Mb with FPU, System 7.5, Frog 120 external hard disk plus SyQuest 135Mb. Any ideas on how to progress without buying a new computer?
Andy McLaughlan
Dundee

I know how you feel – my father-in-law is still driving his 20-year old Volvo because, he says, it's served him well and has years of life left in it. My own Mac Plus is still going strong. But I ➤

System 8 Wish Lists

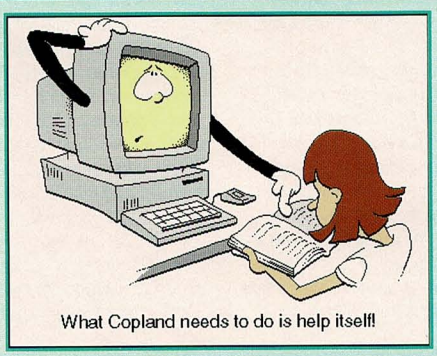
Now that Mac OS 8 is getting closer (at least in instalments – see this issue's News pages), what do you want to see Apple include in it?

■ **Richard Osmond** of **South Croydon** says there are two things he's always felt the Mac Finder lacked – both of which he got used to in his days as an ST user with *NeoDesk.*

"I'd like to see the info bar just below the drag bar on windows change when you selected an icon," he says, "to give you information on the file(s) selected – how large they were, date created/modified, read/write status, and perhaps for programs what their minimum required memory was. It seems so unnecessary having to use **[command] I** all the time, particularly when you're trying to fit a number of files onto a floppy and you need to know how large a number of files are.

Secondly, what about a split-window facility for those really huge folder windows, like in *ClarisWorks?*

■ **Atli Bollason** of **Reykjavík, Iceland,** says he'd like to see:
(1) Longer filenames. It would be nice to use more than 31 characters – 100 would be fine.
(2) An "Idle Time Folder" in the Mac OS folder. There would be a Control Panel named **Idle Time** or whatever, where you set the time – say, five minutes; then after five minutes of idle time the items in the folder would launch.


What Copland needs to do is help itself!

MACFORMAT reader Dan Karran's wish for Mac OS 8, AKA Copland. Apple seems to be thinking along the same lines, with plans for "intelligent" help systems. See our "A-life" feature, page 30.

[A sort of super screen saver? – Ed]
(3) An ability to draw 256-colour icons.
(4) In pictures of System 8 there seem to be three styles (hi-tech, 3D and Children), right? In the Mac OS folder there should be a folder named Styles, where third parties could create their own styles.

■ **Ives Gobau** of **Berchem** in Belgium writes:
(1) Very often, I see a read Me file on a CD-ROM, double-click it and my Mac opens *SimpleText* from the CD. If I want to eject that CD, my Mac refuses because the CD contains items that are in use. I have to quit *SimpleText* first. I'd like it if each time I open a TEXT file, the Mac should take *my* copy of *SimpleText,* which is on my start-up disk.
(2) In the **Views** Control Panel there is a checkbox for "calculate folder sizes". I would like to see two boxes: one for hard disks and one for removables (CDs).
(3) *PC Exchange* does a great job by giving PC files the right Mac App/Creator types. Unfortunately, it only works for floppies. It should also work for PC CD-ROMs.
(4) Aliases to applications should include a "preferred memory" setting. You could then make two aliases to your word processor, one which gives it 1Mb if you want to write a letter, and the other that gives it 5Mb for when you want to write your thesis.

■ And finally, **Ian Shires** of Drummer Design, **Budapest, Hungary,** writes: In the old days of System 6, it was possible to know whether the Mac was working or had frozen, by looking at the watch cursor. Amazingly with the greater sophistication of System 7, the watch cursor often stops ticking. Just a simple wish for System 8: make the watch tick again. I'm getting tired of forced restarts which are actually false alarms.

■ ***Send your Wish List to: "System 8 Wish List" at the address on the opposite page.***

The last word on the Great "Porn" Debate?

In MACFORMAT 32, reader Tony Wighton protested at "porn" on our Cover CD in the form of Strip-Mac, a text-based strip-poker game. We invited responses.

Okay, I'll admit it: I've played *Strip-Mac,* and what's more, I've even enjoyed it. Yes, my wife and I have had one or two very pleasant evenings with a bottle of wine and this program. And we thought it was just harmless fun.

But according to Iain Fairweather, the game "may eventually be played on the streets or in someone else's home against their will" and can result in "incidents in which children or women are sexually abused or even killed." D A McHardy is worried about "post-marital infidelity and marital breakdown [leading to] depression and suicide in divorcees."

Well, their perceptions are certainly quite different from ours. Makes you wonder why, doesn't it? Perhaps we should take a good look at what *Strip-Mac* does and doesn't do.

Pavlov would say (if he weren't quite so dead) that many of our reactions are a result of repeated associations. Ring a bell when you feed your dog, and eventually it will salivate with just the bell and no food. It's exactly the same with advertising – just look at how many products are advertised with a desirable woman or man to make us subconsciously attracted to them.

So what's *Strip-Mac* advertising? Child abuse? No, there's nothing there about children. Violence or rape? Nope, nor any kind of non-consensual behaviour. Infidelity? No, not even that. In fact, *Strip-Mac* doesn't even mention intercourse. If anything, *Strip-Mac* is simply advertising sex (in its broadest sense) by suggesting that sex can be fun. But what's wrong with sex? Sex is a good thing. Sex makes people happy. Sex keeps married couples together. And if it wasn't for sex, none of us would be here.

But if sex is such a good thing, then why are some people so violently opposed to anything that focuses on it – like *Strip-Mac?* Well, some people are just uncomfortable with sex. They don't like talking about it, and they don't like other people talking about it – maybe because they picked up their parents' attitudes towards sex, or maybe they later picked it up from a sex-negative culture such as fundamentalist Christianity. Whatever the case, it's their problem and they have to deal with it themselves. If they try to project their problem onto society by blaming it for their uncomfortable feelings, they help neither themselves nor anyone else.

I am sure that they would say that their arguments are quite logical – that they have nothing to do with the emotions described above. But are they? Let's take a look. Kim Traynor talks about the "sleaze that drips off the top shelf" and "pathetic adolescent obsessions." These are emotive words, and hardly the stuff of reasoned debate. Iain Fairweather jumps from soft porn to rape and murder: that's quite a gap in his logic. And D A McHardy's series of inferences is tenuous and unsubstantiated. Where, for example, does *Strip-Mac* "advocate promiscuity"?

Strip-Mac is not top-shelf material. It contains no explicit photographs and no graphic descriptions. It is, in fact, tamer than much of the material that appears in mainstream women's magazines like *Cosmo* and *Cleo* – which you can buy in your local supermarket. Judging by the popularity of these magazines, it is clear that most people do not want periodicals to be censored to the extent that this kind of material is eliminated. If MACFORMAT allows itself to be swayed by the vocal protests of individuals like Kim Traynor, Iain Fairweather and D A McHardy, then it will be certainly going against the wishes of the majority. Perhaps the silent majority, but the majority nonetheless.

There is a time and a place for censorship: we could well do with less violence on our TV and computer screens. But efforts that are focused on something like *Strip-Mac* are sadly misdirected.

George & Ulrike
New Zealand,
via FutureNet

We're conscious that MACFORMAT is read by a wide audience, and we won't put anything on our CD which we think steps over the mark.

think you've reached the practical limit with your machine. There used to be a "Thundercache" accelerator for the Classic II (made by MicroMac in the US and sold in the UK by specialists like Mygate and Mac Rapide), but this is no longer listed even in the US product directories. I would think seriously about a new Mac. If you bought it new, your Classic II would have cost you around £1,200. For not much more, you should now still be able to find a Power-Mac 7200/90, which is almost incomparably faster. See our cover feature last issue for full details of all current Macs and Mac-compatibles – if you missed it, turn to page 128. Next issue, we'll be showing you how to get the best from your Mac, whichever model you have.

The final insult?

I was very interested to see that as a free supplement you are going to be giving us a bit of the newish mag from Future Publishing, namely *Computer Arts*. I have looked at this magazine in the newsagent on more than one occasion. It looks good apart from one thing – and I'd have thought MACFORMAT would have grasped this – the magazine is full of designers doing art/design stuff on their Macs (Neville Brody for one, but using cross-platform programs for the most part), but its cover CD is only for PCs. Completely crazy if you want Mac users to buy the magazine. Why not make it dual format, at least?

James Nairne
via FutureNet

*You've got it. **Computer Arts** has seen the light, and from its fourth issue, on sale 3 October, its CD will be dual format. As you note, the magazine has always covered work being done on Macs (Computers? Arts? How could it not?), and these days the major software is available on both PC and Mac anyway, so tips and walk-throughs should be relevant to both. Our supplement this issue gives you a chance to see what it has to offer you. Me, I think it's pretty good stuff.* **MF**

There is not enough memory available
to use the transparent background.
Increase the memory size by -6 KBytes
and try again.
OK

Martin Deutsch sends us this Silly Thing and asks "how can you increase a memory size by -6K?" (And when Apple uses that picture in its adverts, remember where you saw it first!)

How to get in touch with MACFORMAT

■ **Our address for letters is on page 24 – the shorter your letter, the better its chances of being printed. Longer letters may appear in our regular "Talking Point" section (page 129 this issue). If you'd like a letter included in the Readers' Corner on our CD-ROM, make sure it contains no defamation or obscenity, then send it in as a *SimpleText* document on a disk marked "MACFORMAT Readers' Corner". Include your name and address, and note that we can't return your disk.**

■ **Our fax number is 01225 446019. Please write "MACFORMAT" prominently at the top so our receptionists can tell which of Future Publishing's 40 magazines to forward it to.**

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■ **Sorry, but we cannot give personal help with technical problems or buying advice, whether by phone, fax, mail or e-mail. If you have an urgent problem with a new Mac, try the Apple Assistance Centre, 01753 615999.**

■ **If you have a defective Cover Disk or CD-ROM, please return it to the appropriate address given on page 12 this issue, *not* to the editorial address. We do not have any stocks of Disks or CDs here.**

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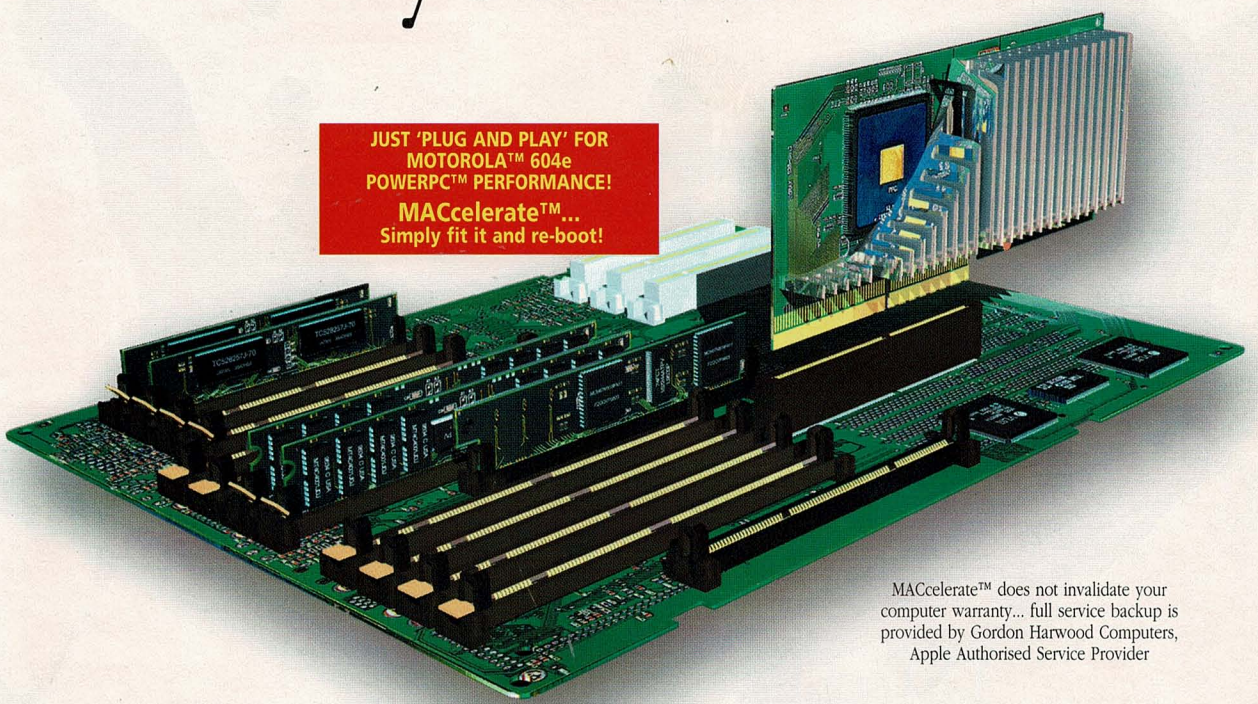

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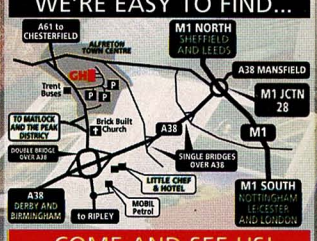

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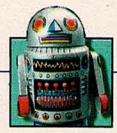
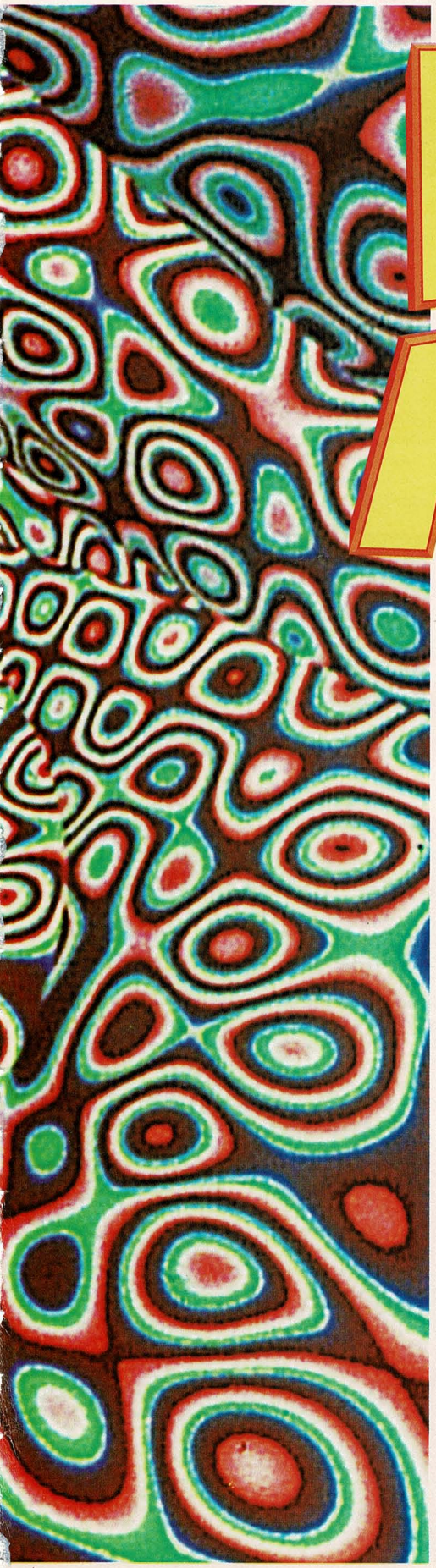




IT'S ALIVE!

One day soon your Mac could become home to dozens of digital creatures that will live and breed inside it, or perhaps run errands for you. Garrick Webster investigates artificial life and exactly what it could do for you and your Mac...

Orange-flavoured drink. Apple-flavoured drink too, if you will. Chocolate-flavoured cake covering. They're never quite as good as the real thing, are they?

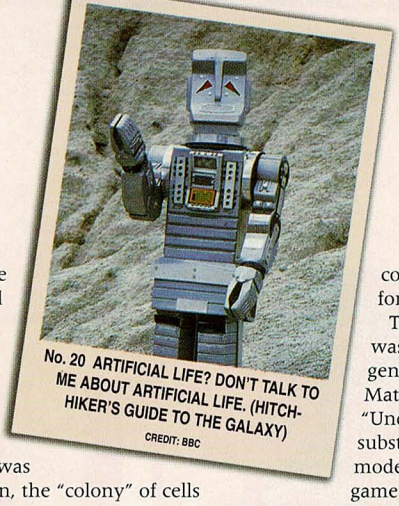
Artificial intelligence (AI) has a similar reputation. In the movies and on TV, it's always going horribly wrong (as in *2001* and *Westworld)* or it's just plain flaky (like Marvin the Paranoid Android in *Hitchhiker's Guide to the Galaxy,* everyone in *Red Dwarf* from Rimmer and Kryten to the Scutters, or the big ED-209 – the over-zealous two-legged "gunslinger" robot – in *Robocop)*. Nevertheless, serious researchers into artificial life are determined to get it right.

Artificial life – or "A-life" – is a relatively new branch of science that melds the highest levels of computing and biology. For some programmers, the goal is to come up with a superior form of AI by building software models of the smartest computer currently known, the brain, and seeing if those models can learn and adapt their behaviour as we can. Others approach it in a different way, believing that computers can be useful for simulating biology.

Today, programs can very accurately simulate both organisms and their environments – creating competing, reproducing creatures, with the possibility for genetic mutation and adaptation, as well as the pressure of natural selection. Nature has taken some four billion years to get us where we are today, but computer simulation can both speed up evolution and answer new questions. What if we changed this gene here? What if that predator were eliminated from the food chain? What if this creature had a slightly larger brain? In the words of Chris Langton, who heads up the Santa Fe Institute, a key centre of A-life study, "By extending the horizons of empirical research in biology beyond the territory currently circumscribed by life-as-we-know-it, the study of artificial life gives us access to the domain of life-as-it-could-be."

What does all this mean to you? More lifelike and intelligent games, for a start – and therefore probably even more entertaining sims. Beyond that, A-life is likely to affect how you interact with your Mac, use the Internet, experience virtual reality and create computer artwork. With computer-controlled systems being used more widely, A-life could even have an impact on your real life at home, in the car, wherever you go. Perhaps surprisingly, the famous robot taxi-driver from *Total Recall* is one of the least unlikely applications of this new science. Read on and meet the main characters in the whole exciting story...

No. 39 TOTAL RECALL: GASP IN HORROR AS SINISTER ROBOT TAXI DRIVERS DRIVE VERY CAREFULLY INDEED.
CREDIT: CAROLCO/TRI-STAR (COURTESY KOBAL)



No. 20 ARTIFICIAL LIFE? DON'T TALK TO ME ABOUT ARTIFICIAL LIFE. (HITCH-HIKER'S GUIDE TO THE GALAXY)
CREDIT: BBC

Your Mac seems to have a life of its own, doesn't it? It crashes when it knows you haven't saved your work, it plays up at the worst possible time, and it keeps moving your files and icons around... Try to rectify a bad situation and it lets out a "quack" or a "ping" just to say "Hey, I'm watching you – and I'm laughing at you to boot."

Apple has always produced the most human, friendly and intuitive operating system, and sometimes it does indeed seem as if your Mac is alive. But it is, after all, nothing more than a bunch of electronic components. As artificial life creeps onto the scene, however, things could change...

The Game of Life

Actually, you've probably dabbled with A-life on your Mac already, playing *SimCity* and *SimCity 2000*. Both these classic games are actually just larger, more complex versions of cellular automata like John Horton Conway's *Game of Life* (see the box below), which was the first ever computer manifestation of what we now call artificial life.

In essence, it was lifelike because it was self-replicating. Whether any "cell" survived was determined by simple rules – if it was in contact with no other living cells, it would die of loneliness; if it was in contact with one other cell, it would remain alive; if it was touching two other cells, it would produce an offspring cell; and so on – but the exciting thing was that, turn after turn, the "colony" of cells grew and developed.

Today, the main practical contact we have with self-replicating A-life is in games. Of course, the state of each cell on a *SimCity 2000* grid has many more rules applying to it than those in *Game of Life*, and usually involves user input too, but essentially it's the same. Once you've created commercial, industrial and residential zones, transport and a power supply, the little squares can spring to life. Buildings pop up, passing the power supply to adjacent cells, water pipes are built and SimCitizens appear, asking for schools, protection from crime and a fire service. As the cells change, or as you change the conditions around them, they interreact with one another. You just set up the system and watch a seemingly living city "grow" right there on your Desktop. As you dabble, it develops in new and unexpected ways, and it's very easy to get hooked.

Visit the Isle

The latest Sim game from Maxis, *SimIsle* (reviewed on page 115 this issue), is also basically a cellular automaton. However, rather than a set of rules, the state of each cell is determined by an extremely complex model of rainforest ecology.

This latest Sim-offering was designed by Intelligent Games, whose head, Matthew Stibbe, explains: "Underlying *SimIsle* is this substrate of an ecological model that divides the game into a series of cells. They're not actually rectangular – they're a bit more like polygons. What that does is it allows you to have much more organic shapes with your grid. But essentially the formulation is the same. You have a cell that's described as rain forest and the cell next to it is described as arable land, and an adjoining cell. The gaps between the cells can be roads or rivers. What you do is you work out what's happening in a cell and how that affects the cells next to it."

As Matthew Stibbe will readily admit, however, *SimIsle* is only a living system in a broader sense – we're not talking about

***SimIsle*, the latest in the popular *Sim* series, is different in that you affect the course of events by acting though agents.**

Automaton evolution

The cellular automaton is one of the best known types of artificial life program, but this sort of software also forms the basis of some of the most popular games ever.

Basically, a cellular automaton is a grid of cells. The internal state of each cell is determined by a set of rules. In *The Game of Life*, devised by Cambridge mathematician John Horton Conway in the '60s, these rules are brief and simple. If a live cell has no neighbours, it dies of exposure. If it has one, it survives, but in stasis. If it has three or more, it dies of overcrowding. But with two, it reproduces, using an empty cell adjacent to it.

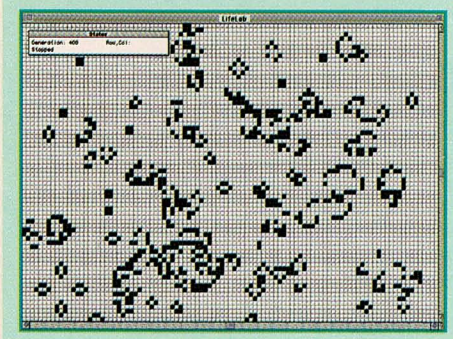
Each turn, dead cells would be removed and new births would appear. Infinitely self-replicating patterns were discovered, along with structures of cells that could infinitely produce them.

Conway's game enjoyed a huge cult following in the 1970s, and its implications were astounding. Theoretically, this simple rule-based system, starting from a certain pattern of live cells, could grow into a massive living computer all on its own. In such an instance, however, the grid accommodating it would have to stretch across the known universe – or further! Conway speculated that a creature roughly as complex as a single-celled organism would require a grid measuring one million by one million cells.

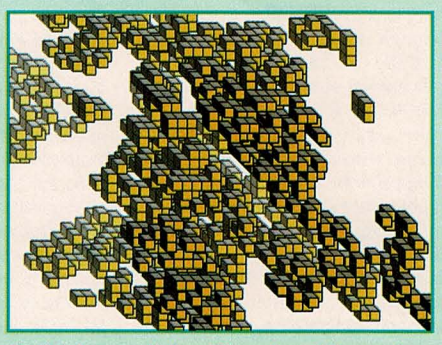
Increase the number of rules and internal states, and you have a recipe to make an incredibly complex automaton life. Jon von Neumann theorised about a cellular automaton in which each cell could exist in one of 29 states. No-one has ever written a program like this, but Chris Langton wrote one in which each cell could exist in eight states. It grew into something that looked like a coral colony.

ON THE CD

You'll find demos of all these on the Cover CD

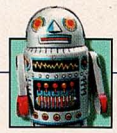


***LifeLab* is one of the fastest running examples of Conway's *Game of Life*. In this cellular automaton the rules are simple and two-dimensional.**



***Trevista* is essentially a 3D version of Conway's *Game of Life*. The rules determining life or death in each cell are therefore slightly more complex.**

In their highest form, such as in *SimCity 2000*, the rules for each cell are extremely complex. But what a fascinating game they make.



Wanted: godlike geneticist

Fancy populating a simple simulated environment with creatures of your own making, then fiddling with their genes, and generally trying to keep the whole confusing mess in order? Well, that's the kind of gameplay on offer in *SimLife*, a predecessor of *SimIsle*. You define physical environments by terrain and climate, then release plant and animal species into them to see if they would survive. Libraries of organisms are available for you to start with, or you can specify a genetic make-up of your own and see how well suited your organisms are to their environment, whether they get eaten by predators and whether they can survive long enough to reproduce...

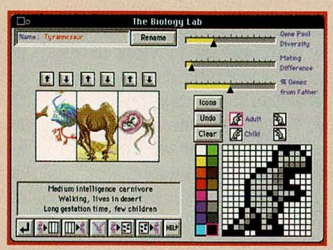
Vivarium is in the A-life Shareware folder on the CD

Or you could have a bash at *Vivarium*, a shareware A-life game on this issue's Cover CD and Disk. Here, you have only four species to dabble with, and there are no confusing genetic factors to master. You design both the rules your creature lives by and its capabilities. The senses on offer are sight and smell (olfaction). The stronger you make their senses, the more they need to eat. Likewise, the greater their movement capability, the more food they require. And finally, carnivores are hungrier than herbivores.

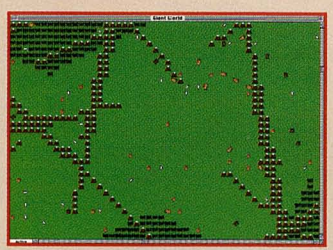
Our game suggestion is that you create lots of herbivores with weaker senses and movement capabilities, and then a smaller number of carnivores to feed on them. In the middle, you could add some cannibalistic omnivores. It's a challenge to get the balance right.

What's neat is that, although it looks rather simplistic, the creatures in *Vivarium* can actually learn. As they adapt their behaviour to the environment, they pass on their traits to their offspring. The ones with the best adapted behaviour are more likely to breed, and subsequent generations should therefore be genetically improved. It's a full Desktop artificial life environment!

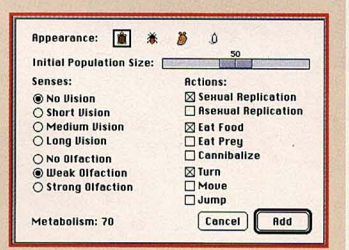
With *SimLife* you can head back to the days of the dinosaurs and find out whether your humble dino-management skills would do a better job of keeping them alive than history did.



The genetics lab in *SimLife* enables you to design your own plants and animals. The design you come up with determines your life form's survival needs, its behaviour and, indeed, its genetic make-up.



The mountains are obstacles to the movement of the creatures. The ones which adapt to that fact tend to survive better. After all, you won't find a mate by staring at a rockface all day.



When you start playing *Vivarium*, create a new document, then select Add Lifeforms under the Options menu. Set up the capabilities of each creature you want to introduce. We usually make the mice carnivorous.

simulated creatures that breed, eat and fight to survive. "I think what we've done in *SimIsle* is we've created a model that is like a little Gaia model," he says, referring to the theory that the entire planet is a living organism. "It has so much complexity built into it that it's quite hard to predict how it's going to behave. But it has behaviour patterns, it has a kind of inherent objective.

"I would hesitate to say this, but it seems to be alive in the same way that maybe an amoeba is."

Playing *SimIsle*, however, you'll discover that it's not quite like the previous *Sim* games. Instead of interacting directly with the map as you do when you place a power station or railway line on the *SimCity 2000* grid, in *SimIsle* you implement your plans using partially intelligent agents. Each of these agents has certain skills, and each should go out into the rainforests and villages of the tropical islands in the game to do your bidding.

The use of autonomous agents that can help you with certain tasks, or even do your work for you, is very much a growing field within the study of A-life.

Secret agent man

Autonomous agents can take many forms. They can be characters in games, like those in *SimIsle*, or robots, like Robbie from *Forbidden Planet* or Number 5 from *Short Circuit*. They can be fully self-contained software utilities, like Internet search engines, or they can even be very simple strings of code, existing within a digital environment like computer viruses.

Any of these must, of course, respond to changes in its "environment" (if a search engine, for example, encounters whatever it is programmed to find, it must react); but what makes it A-life is an ability to consistently adapt its behaviour – that is, to learn. An intelligent search agent might, for instance, remember where it succeeded last time and *begin* its next search there.

Apple is developing software agents as part of future versions of the Mac Operating System. Your Mac won't quite be brought to life by Mac OS 8 (AKA Copland), or even the System version after that (codenamed Gershwin), but it will become more attentive to how you use your machine.

"In several small steps," says Onno Kluyt of Apple Europe, "we are developing intelligent agents. We don't think an all-encompassing intelligent agent in itself will work, so the process we are taking is more towards dedicated specialised agents." One, for example, might be a "telephone agent" that simply answers your phone and then records messages or acts on the messages, depending on which caller it is.

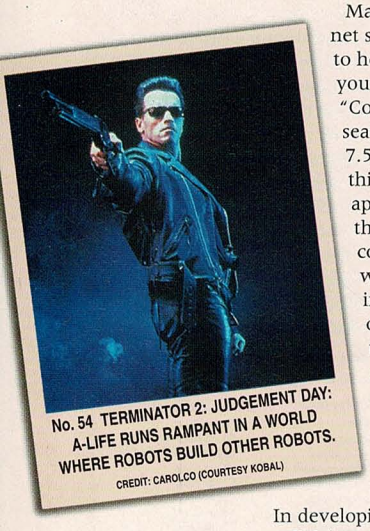
No. 33 THE EVIL CYLONS VOW TO WIPE OUT ALL MEN WITH DODGY 1970S HAIRCUTS (BATTLESTAR GALACTICA).
CREDIT: UNIVERSAL (COURTESY KOBAL)

No. 46 ROBOT NUMBER FIVE RUNS AMOK AS ITS WACKY SILICON BRAIN GETS A SHORT CIRCUIT.
CREDIT: TRI-STAR (COURTESY KOBAL)

"Same thing with agents that try to monitor and understand what you do with the machine and then provide help," Onno Kluyt continues. "They're basically the next generation of AppleScript and AppleGuide." So, for instance, if the system watches you attempt to log onto a network and fail, it will pop up and ask you if you'd like it to do the task for you automatically. It will even offer to teach you how to do it. Or if it sees ➤

Chris Langton

Many regard Chris Langton as the father of artificial life. In 1987, he invited over 100 scientists and technicians to Los Alamos, New Mexico, to establish artificial life as a new scientific field. Today, Langton is the Director of the Artificial Life Program at the Santa Fe Institute, the pre-eminent research institution in this subject area. He also heads up the Swarm Project, which is developing a multi-agent simulation tool intended for A-life researchers. What's more, he's also Editor-in-Chief of the *Artificial Life Journal*.



No. 54 TERMINATOR 2: JUDGEMENT DAY: A-LIFE RUNS RAMPANT IN A WORLD WHERE ROBOTS BUILD OTHER ROBOTS.
CREDIT: CAROLCO (COURTESY KOBAL)

you repeatedly going about a particular function the hard way, it will notify you of the quicker keyboard shortcuts that are available to you.

Mac OS 8 will include an Internet searching agent called *Cyberdog* to help you find things both on your Mac and out on the Internet. "Compared with the current Find search that you find in System 7.5, it will give the user two things," says Kluyt. "One is that apart from just the name of things you can also search the content of documents. Also, it will provide a relevancy ranking of the documents – based on the search criteria the user types in, it will order the documents according to how relevant it thinks these documents are."

Go fetch, doggie

In developing *Cyberdog*, Apple actually collaborated with some of the top names in Internet searching, including AltaVista (**http://www.altavista.com**). It did so not only in order to exploit their expertise in writing "Find" algorithms, but also to get help with incorporating the Internet with the Finder. Yes, with new versions of the Mac OS, folders of data on the Net will appear on your Desktop, just like folders on your hard drive (though access to them will necessarily be slower).

Over the next year or two, all this should start making your Mac even friendlier to use. However, much of the impetus for A-life research has been for less than friendly purposes. The American defence industry has been keen to develop a variety of systems, including "intelligent" robot bomb disposal teams, software designed to penetrate enemy network systems and disable them (maybe Macs could help here, if *Independence Day* is any guide), self-driven attack vehicles and even the predictable, *Terminator*-style metal warriors.

Nevertheless, the Autonomous Agents Group at the Massachusetts Institute of Technology, one of the major centres of A-life research, also has more peaceful projects under way. One is a match-making agent called *Yenta*. You give it your personal romantic details and a description of what it is you're looking for in a dating partner, then release it out onto the Net to seek out autonomous agents representing other lonely hearts. If two closely matched agents were to find one another, they would exchange contact information for their patrons and return home. You could then decide whether or not to e-mail or telephone the person *Yenta* deemed suitable. No need to worry about eye-contact, chat-up lines or awkward body language – *Yenta* would break the ice for you!

Another agent project being developed at MIT is *Kasbah*, which can trade and barter in a digital marketplace on behalf of businesses. You enter the highest and lowest prices you'll pay for some commodity and the quantities you require, and set the agent loose into the trading forum. The hope is that *Kasbah* will wheel and deal, then return having got the best possible price for you.

Even further down the road is a system in which numerous competing agents vie to complete the tasks you set them (information retrieval or whatever) as quickly and accurately as possible. According to the Darwinian laws of natural selection, the ones that fail will simply die out. Harsh, yes, but no one said nature – or even simulated nature – was kind. The ones that learned quickest, however, would enter new rounds of competition, and some would, perhaps, specialise themselves for specific tasks.

In the *Webdoggie* project, meanwhile, an agent is being developed which offers you Net information it thinks you will be interested in, based on a survey of the tastes of thousands of other users. So, if you like Black Sabbath and you want suggestions as to similar bands to check out, the *Webdoggie* would refer to the profiles of all the other Black Sabbath fans for the most commonly suggested other bands. It might even go on to download some music clips, discographies and album reviews for you.

But inevitably, the area in which the MIT experts expect autonomous agents to have the most impact is entertainment. One system that MIT Professor Pattie Maes has been looking at is called ALIVE – Artificial Life Interactive Video Entertainment. Users of this system stand before a huge video monitor and can move about in a 16ft by 16ft area. With video cameras trained on them, their images are composited into the 3D environment displayed on the screen, and they can watch themselves interacting with lifelike artificial agents like a dog, a parrot and a hamster. The experience might be like stepping into the world of *Tron* or perhaps *Lawnmower Man*. Another project is an autonomous aerobics instructor which will actually correct users who are performing exercises incorrectly.

No. 30 TRON: ALMOST-HUMAN LIFEFORM GETS THE HUFF AS WE GIGGLE AT ITS PRIMITIVE COMPUTER GRAPHICS.
CREDIT: DISNEY (COURTESY KOBAL)

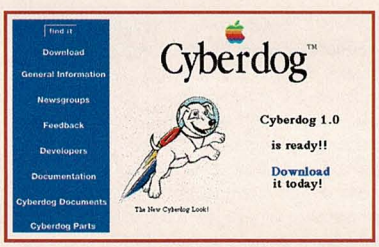
Quest for the grail

Anyone who's played with a multi-user dungeon (MUD) may already have come across very lifelike non-human characters. Played over the Internet, this form of role playing can involve lots of characters, both human and computer controlled. Usually, the monsters are computer controlled, but occasionally you encounter characters called chatterbots which behave so realistically that it's hard to be sure.

Such realism is pretty much the holy grail for games makers. If you've ever had the chance to play deathmatch (multi-player) *Doom* or race against human drivers in multi-player racing games, you'll know that they're infinitely more fun than the stiff, methodical single-player versions. According to Dr David Cliff, lecturer in Artificial Intelligence and Computer Science at the University of East Sussex, the crucial element is that your opponent "is trying to monitor your strategy and tactics and find flaws in the way you play and exploit those flaws. It will take quite some time, but artificial life technologies offer a mechanism for incorporating that kind of adaptability, stealth and desire to outwit the player".

Pattie Maes

Professor Pattie Maes is the principal investigator of the Autonomous Agents Group at the MIT Media Lab. As well as researching ways in which artificial life technology will contribute to the development of computer entertainment (and entertainment in general), Professor Maes is working on the development of numerous sorts of autonomous agents, some of which are intelligent search agents, others that have commercial purposes and others still that are more light-hearted in nature.



Apple collaborated with AltaVista when making *Cyberdog* in order to get expert advice on search algorithms.

With the ALIVE system, you stand in front of a large screen and interact with characters such as Silas T Dog, seen here. The dog will interpret and respond to your actions and gestures, such as pointing, in a realistic manner.

Wouldn't it be great if the computer-controlled characters in *Marathon* behaved more like your opponents in multi-player mode? That would be a challenge.

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No. 28 BLADERUNNER: SO REAL EVEN THEY DON'T REALISE THEY'RE NOT HUMAN – THE REPLICANTS MARCH.
CREDIT: LADD COMPANY/WARNER BROS (COURTESY KOBAL)

The answer, say those on the forefront of A-life technology, is to stop giving game characters motivations or intelligence based on sets of rules. Rules result in predictable, unchanging behaviour – the little people in *Theme Park*, for example, are programmed to get hungry or thirsty, and to need the toilet after these artificial appetites are satisfied, and even to throw up if they ride the roller-coaster too soon after eating, but not one of them will ever learn the food-before-ride-equals-vomit equation. It's up to *you* to position the burger bar further from the ride or make the queue longer.

No. 19 BLAKES SEVEN: GAZE IN AWE UPON ARTIFICIAL LIFE SO SMART IT GETS BETTER LINES THAN THE HUMANS.
CREDIT: BBC

The alternative to these rule-based characters is to use brains based on neural networks (see the box below). That's what you can expect in *Creatures*, a new "life simulation" from Millennium Interactive (previewed in MACFORMAT last issue). The behaviour of each of the creatures of the title (called "norns") is controlled by a neural network capable of remembering inputs and relating them to certain outputs – in short, learning. So if, for example, you give a norn a carrot and it eats it, you can scratch the creature's head to reinforce the idea that it has done a good thing. If it throws the food down, you can smack it. If it happens to eat some poisonous food and get ill, it might remember to avoid that food next time, and so on.

Motivation for the norns is provided by an internal feedback system. Anil Malhotra, director of the Millennium CyberLife project, which came up with *Creatures*, explains. "We have a virtual endocrinal system. We've got pain increasing hormones, we've got adrenaline in there, we've got all the biochemical enzymes needed to impute that you're hungry etc, etc."

The little people who visit your funfair in *Theme Park* are rule-driven: if they get thirsty and have a drink, they need a toilet. So predictable – yet so credibly lifelike.

Ten times a second, information from a norn's virtual biochemistry washes over its neural network brain. If there's a strong lack of glucose, the creature will sense hunger, and if it has learned about food, it will try to find some. If it touches some fire, a sharp increase in pain hormones will result and it should first move away from the heat and then register that fire is painful to touch. When it plays with a ball, endorphins will go to the brain and the norn should remember that the ball is a pleasurable toy. "There are actually 250 genetically specified internal chemicals," Anil Malhotra says. "That's a substantial amount. We've even got testosterone so our creatures actually have a motivation to breed in exactly the same way you and I do."

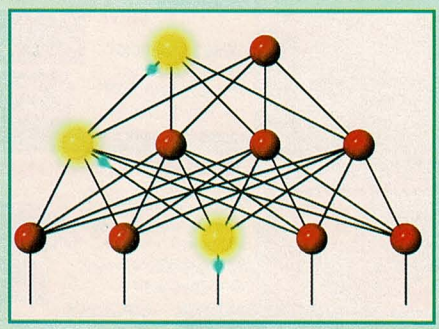
In fact, that's not quite accurate – all it takes for a norn is a big sloppy kiss with a suitably receptive mate. But in one crucial respect, norns' reproduction is just like the real thing. "We wanted their offspring to have the capability of having a unique set of genetic characteristics," explains Malhotra. "So we created this quite complex software which created a simple but authentic model of DNA, which we call Digital DNA."

Neural networks: lifelike artificial intelligence

Neural networks promise a smarter and more adaptable form of artificial intelligence than the rule-based routines found in most software. But what are they?

Neural networks are, very basically, software constructs modelled on the way that brains work. So, instead of a long and complex list of rules that try to govern every situation the system is likely to encounter, all a neural network offers is a complex web of interconnected neurons, all of which can receive, store and pass on binary data.

Together, a very large number of neurons work together to solve problems – if there's no solution in the few basic rules, the system doesn't trip up but keeps trying until, by trial and error, it comes up with the correct response. Once it has identified a way of handling a certain type of input, the system will automatically know what to do the next time it senses such information. Hence, neural networks are capable of real learning.



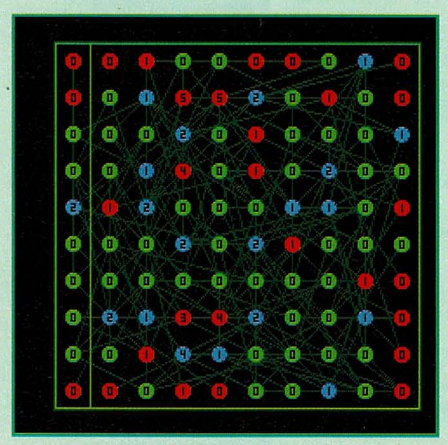
As computer-driven neural networks grow in complexity, could they become sophisticated enough to be considered new lifeforms?

Take a simple example. A neural network for optical character recognition software might be fed a graphic of a letter. It will try and "guess" the letter using a simple matching routine. If it gets it wrong, it will be given the letter again – but remembering the wrong answer each time, it will approximate towards the correct answer. Eventually, passages will form through the neurons, enabling instant recognition of letters of numerous typefaces – even ones from torn or defaced scripts.

Each neuron in a neural network can also have a non-linear response. That means the output a neuron gives needn't be equal to or in direct proportion to the inputs it receives. If, for instance, it were receiving stimulus at a rate of 10 times a second, it may give no response. Increase it to 20 times a second and it might react with a charge valued at five. Hit 30 cycles a second an it could very well send a charge to other neurons in the net worth 500, so that some kind of action is taken to reduce the input level.

Add the possibility of feedback paths within a neural network and, the theory goes, every output of the network overall can also produce further inputs internally, within the system. With closed feedback loops bouncing new impulses back and forth between the neurons, the network can begin to stimulate itself. Potentially it could even develop a memory and internal state that's affected by things that have happened to it in the past. This is an area of active research at the moment. Could it mean emotion or consciousness could arise in a neural network?

At the moment, neural networks are being employed in OCR software. Also, at least one bank in the United States is using a neural network to detect credit card fraud by identifying uncharacteristic spending patterns.

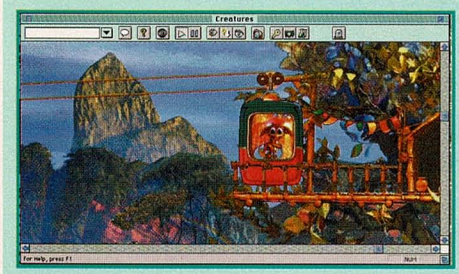


Try out the *NeuroSim* program on our Cover CD. Clicking on one of the sensory neurons down the left sends an impulse to the neurons it is connected to. This may or may not change the charge held in that neuron. When you've clicked one neuron two or three times, you'll notice some of the neurons it's connected to discharging energy, which may change the state of other neurons in the network. This shows how a neural network responds to inputs by passing on information.

No. 6 METROPOLIS: RECOIL AS MAN ACHIEVES HIS ULTIMATE AMBITION – A WOMAN HE CAN SWITCH OFF.
CREDIT: UFA (COURTESY KOBAL)

Creatures roaming free...

Don't be deceived by the cutesy feel of *Creatures:* underneath the sweet graphics lies a highly sophisticated computer-based learning system. Watch as the creatures (known as norns) explore their world and evolve according to what they discover.

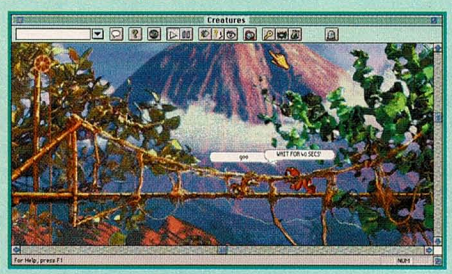


With their ability to learn, the norns in *Creatures* will eventually become able to make use of the cable car which can be found in one part of their vivarium-style environment.

The *Creatures* environment is by no means homogeneous. In one corner your norns will find a desert island habitat. Here we see a norn trying to figure out a radio device.

One of the function screens in *Creatures* is the Owner's Kit. There's one for each norn, and in it you can store snapshots of your pets as well as notes on their progress.

The incubator machine to the left is where you hatch your norns from eggs. In the immediate vicinity your pets will find cheese, honey, a jug of water and a lift going up to a learning machine which you can use to teach them language.



As they have independent brains and a propensity to chatter, your norns will have the ability to teach one another to talk. The younger ones will constantly say "goo" until they manage to learn some more robust diction.

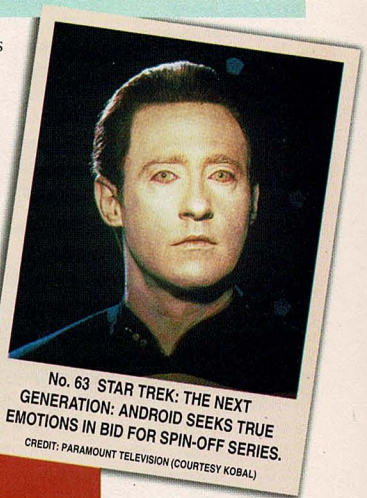
If you teach your creatures well, they should learn that the garden is a good place to go for food. Here they'll find carrots, lemons and – what's that in the greenhouse? A pot of honey – good for the blood-sugar levels.

During breeding, a daughter genome is created on which are placed random characteristics from each parent. Built into the process is the possibility of a cutting error taking place, so that one characteristic is simply left out. There's also the chance that something is duplicated, or that an actual mutation occurs. "Through all three of those mechanisms, the probability arises that the daughter genome is not identical to either of its parents," continues Malhotra. "The daughter genome in the young creature is responsible for its brain development, its biochemical system and therefore its reaction rate to good and bad events, its ability to take flight, its ability to breed, etc. So you're getting real bio-diversity introduced into these creatures through the generations."

This means norns aren't just virtual pets; they're real evolution in miniature. As Malhotra explains, "Real evolution has only ever happened once, so it's very hard to go back and to know what would have happened to the evolutionary pathway if different steps had taken place. The theory is that something other than human beings would have been the outcome. Scientists are particularly interested in *Creatures*, because with potentially hundreds of thousands of users in the world, breeding over time tens or hundreds of thousands of generations, it might be possible to detect how, and for what reasons, particular diversifications in the genetic code take place."

Viruses and worms

If, as Anil Malhotra hopes, *Creatures* does succeed, the norns may come to rival the currently best known form of artificial life: computer viruses. Many claim



No. 63 STAR TREK: THE NEXT GENERATION: ANDROID SEEKS TRUE EMOTIONS IN BID FOR SPIN-OFF SERIES.
CREDIT: PARAMOUNT TELEVISION (COURTESY KOBAL)

The von Neumann Automaton

Back in the 1950s, when computers as we know them didn't exist, the highly regarded mathematician Jon von Neumann thought up a machine which would, just like organic life, be able to reproduce. He called it an automaton.

All the intelligence that controlled the machine's behaviour would be stored on a ticker tape. When read through a device controlling the machine's activities – like a nervous system – this tape would cause the machine to move around picking up mechanical components (which would be in abundance in von Neumann's imagined environment) exactly like the ones of which it would be made. As the tape was being read, it would be duplicated and the copy of it stored. Once all the components for its own clone had been collected and assembled, the machine would insert the behavioural information into its offspring and the new automaton would go off and do the same thing.

Aside from the fact that an environment littered with precisely the right sorts of components for the automaton to find and assemble is extremely improbable, it all sounds a bit scary, doesn't it? With the theoretical possibility of minor flaws in the duplication of the ticker tape, the machines could even mutate into something more complex and powerful, *Terminator*-style. Fortunately, no-one's ever built a von Neumann automaton, nor are they likely to.

What's particularly interesting, though, is the way von Neumann envisioned the transfer of genetic material. It sounds very much like the process followed in living things, but when he wrote his theories, DNA hadn't even been discovered.

Jon von Neumann

Von Neumann came up with the idea that a self-replicating machine could be built: an automaton. Though impractical at the time, his accompanying theory that life is based on logic rather than being a God-given force underpins the whole concept of artificial life. Von Neumann's main field, however, was physics, and he was a participant in the Manhattan project, the team responsible for producing the first atomic bomb.

that viruses are the form of A-life which most closely conforms to the textbook definition of biological life.

To begin with, they exist to survive and "procreate" – when they "infect" a piece of software code, they typically modify it so that each time the software is run it duplicates or reproduces the viral code. Filling up your disk space and crippling or corrupting the host software are commonly just incidental to this imperative to reproduce. What's more, built into many viruses is also the ability to seek new programs to infect, via files exchanged between computers.

No. 13 2001: A SPACE ODYSSEY: CRY HAL! AS DESPERATE HUMANS STRUGGLE TO OUTWIT A COMPUTER'S COLD LOGIC.
CREDIT: MGM (COURTESY KOBAL)

Then there is the added pressure of natural selection in the form of the numerous virus-checkers and killers available. Some of the more advanced viruses have been programmed to attempt to fool these by mutating their own code with each new generation, "evolving" to try and keep one step ahead of the predator.

But don't be alarmed. The viral code that controls this "mutation" can itself be detected fairly easily, and modern virus killers can root out whole virus "families" without much trouble. Regular use of a reputable virus-killer like *Disinfectant* (the latest version is on the MACFORMAT Cover CD every issue) will keep your Mac safe.

The point is that the way computer viruses work is closely analogous to the life cycle of real viruses. What if A-life researchers could synthesise populations of simple, virus-like but *benign* organisms that live, reproduce, mutate and adapt within computers? In fact, that's exactly what they're doing in the *Tierra* project.

Get A-life degree

Fancy an MSc in Evolutionary and Adaptive Systems? Contact the University of Sussex on 01273 678754, or **http://www.cogs.susx.ac.uk/lab/adapt/easy_msc.html**

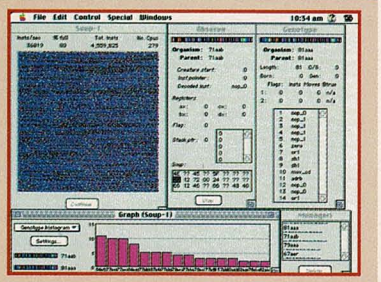
MacTierra

For a masterclass in dabbling with artificial evolution, try *MacTierra*. Based on Tom Ray's original *Tierra*, this piece of software turns your Mac's processor into a veritable primordial soup inhabited by primitive code creatures that need only RAM and computing cycles to survive.

ON THE CD

Simulate evolution on your Mac with MacTierra

***MacTierra* is rather complex to understand but fantastically well put together. You can inspect the genetic code which makes up each 'worm' and even monitor population levels using the graphs. For complete details see the HTML file in the *MacTierra* folder. *MacTierra* was written by Simon Fraser (smfr@ santafe.edu or http://www.santafe.edu/~smfr/).**



It's life, Jim, but not as we know it. *[We apologise for this caption. It's tacky and obvious – but it was written by a Mac without any human intervention. Wow!]*

Conceived and designed by a biologist, Tom Ray, *Tierra* is a software model of a section of the Costa Rican rainforest containing thousands, or even millions, of tiny software "organisms". Nothing more than lines of code containing instructions on how to survive and reproduce, these creatures (or "code worms") will occupy a computer's RAM, but to feed and procreate they require free computational cycles. In this respect they are unlike viruses, which consume software code and not processing power. The faster the chip in the computer they inhabit, and the fewer applications besides *Tierra* it is running, the more sustenance they get and the faster they can reproduce. With the possibility of "gene" duplication and mutation built into the way the worms reproduce, adaptations start to occur.

Tierra can run on a single machine, but the experiment is being extended via the Internet, with some 100 computers in the US and Japan running the *Tierra* software. When it's day in Japan and people are working on the host machines, the worms retreat over the Net to California to feed off the free processing cycles available. When the sun rises in America, the worms return to Japan again.

It really is a huge experiment in evolution. Who knows how advanced these worms will become? Currently, on-line *Tierra* is limited to Windows and Unix systems, but if you're interested there is a non-network Mac version called *MacTierra* on our Cover CD – see the "MacTierra" box above for more information.

Evolving into tomorrow

If such sophisticated forms of A-life were to be combined with virtual reality technologies, we could see some highly

Artificial life on the Internet

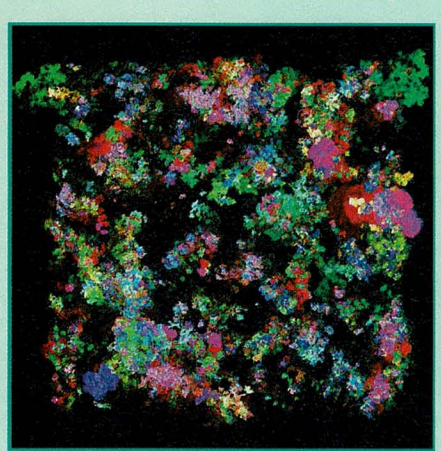
The Internet has, as you'd expect, broadened A-life horizons considerably. It's being used not just to exchange information, but to conduct huge on-line experiments.

The best by far is at TechnoSphere. This site welcomes you to design a creature and then release it into the TechnoSphere, a virtual 3D environment, and see how it will survive.

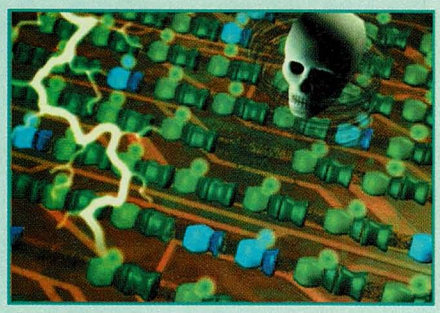
First, you decide whether it should be a herbivore or a carnivore. Then you choose its means of locomotion, eyes, body shape, mouth shape and so on. The choices on offer look more than a bit loony. Your beastie may end up moving using jagged wheels and have eyes on long stalks. (You can even download a "postcard" from the Web site showing what your creation looks like.)

When your critter's done, you name it and release it to make its way in the TechnoSphere. You can't watch its progress, but TechnoSphere automatically e-mails you when your animal dies or manages to procreate. We created two electronic beasties, a herbivore called "The Cudster" and a carnivore named "Yabbler". As far as we know, Yabbler is still alive and well, but The Cudster very quickly became a meal for a family of ravenous carnivores. That's life.

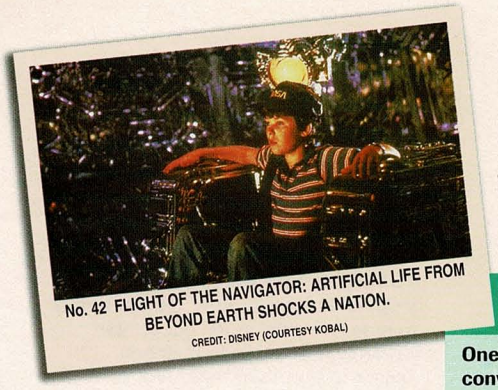
While the beasts at TechnoSphere look madly surreal, the ones at ALife Garden look more like impressionist amoebas. Coming to you from Hiroshima, the ALife Garden can contain up to around 500 creatures, which can feed, move about and breed. Evolution can occur over time. You can, whenever you like, call up a picture of one of the animals, see its size, age and parentage, and read a log of what it's been up to. Soon, visitors will be able to start up their own personal gardens containing creatures all their own.



This is the ALife Garden. Basically, it's a mass of amoeba-like creatures of varying colour.



This graphic is taken from an animation about *Tierra* and it represents a digital environment presided over by a Reaper, responsible for killing-off defective organisms.



No. 42 FLIGHT OF THE NAVIGATOR: ARTIFICIAL LIFE FROM BEYOND EARTH SHOCKS A NATION.

CREDIT: DISNEY (COURTESY KOBAL)

complex real-world ecosystems being recreated for the purpose of hyper-realistic entertainment. In some quarters the aim is to create models of tree and plant growth so that the foliage in VR environments is dynamically changing and thus absolutely authentic.

However, evolution-capable A-life will have an impact on games even sooner than that. Already near completion is a game entitled *Galapagos* in which you'll have to train an insect-like creature to overcome the obstacles in its world. Developed by an American firm called Anark, it uses the company's proprietary NERM (Non-stationary Entropic Reduction Mapping) system, which enables the creature in the game to adapt to any new environment. Traditional rule-based systems of AI are thrown out the window.

Then there's *Project von Neumann*, an A-life game based on the ideas of Jon von Neumann. It's set as a space-based shoot-'em-up, where a machine that resembles von Neumann's automaton (see the box on page 37) is sent into an asteroid belt and forgotten. Years later, human outposts are attacked by superior, evolved versions of the machine. In fact, the A-life engine in *Project von Neumann* will even enable the machines to adapt during the game, making them harder to destroy. They'll also be able to consume the corpses of dead comrades to gain energy and ammunition. In turn, you too will be able to take advantage of the organic qualities of the craft in your fleet. You will, for instance, be able to "breed" ships for specific tasks, perhaps like the organic craft in the film *Flight of the Navigator*. The game is currently being written by a set of dedicated A-life hobbyists and no release date is available just yet.

***Project von Neumann*, named after one of the fathers of A-life, will feature "living" robots battling it out in shoot-'em-up action. It's to be a cross platform multi-player game.**

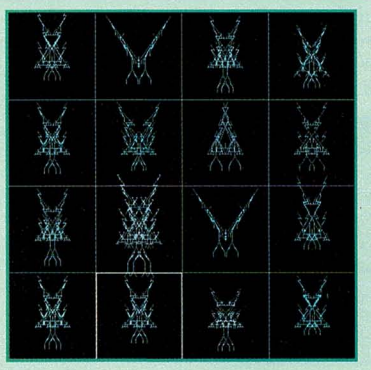
Further in the future, Dr David Cliff speculates, "perhaps you could be a trainer to a Gladiator or something who would enter Internet Gladiator competitions. You could monitor the performance of your agent, and retrain it to perform better in subsequent competitions. You'd also expect it to be learning while it's taking part."

What about more pragmatic applica- ➤

Dawkins' biomorphs

One of the most eminent scientists converted by A-life is the Oxford evolutionary theorist Richard Dawkins. Using a Macintosh, Dawkins wrote a program to simulate genetic evolution. Each matchstick shape in the program had a number of genetic characteristics, which could mutate over time. Users of the program simply choose the biomorph they like and that is the one which lends its genes to the next generations. Dawkins was surprised to find that the simple matchstick-like trees could evolve into shapes that began to resemble insects.

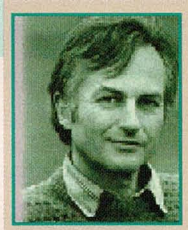
Log on to http://www.fusebox.com/cb/morphs/docs.html and you can play with a Java applet inspired by Dawkins' original biomorph program. What sort of shapes will you help to evolve?



The Morphs applet at the Live A-Life Page can evolve anything from radical Christmas trees to strange insectoid creatures.

Richard Dawkins

A professor at Oxford's New College, Richard Dawkins is best known as the author of books such as *The Blind Watchmaker*, *The Selfish Gene* and *River out of Eden*. Using his Macintosh, Dawkins wrote a program that simulated genetic evolution and, from simple stick-figure beginnings, was capable of evolving elaborate insect-like graphic organisms. His work has influenced many people, including the artist William Latham, as well as A-life programmers the world over.

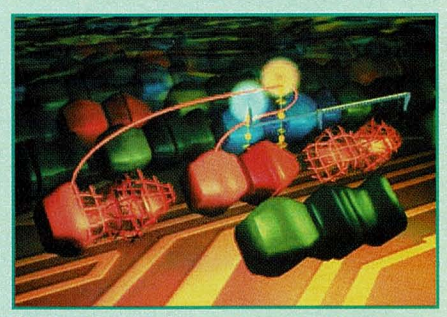


The biggest on-line A-life experiment is probably Tierra. Its home page explains what it's all about. Mac users can't fully join in just yet because there's no Net-savvy version for the Mac. You can, however, see how it works using a non-networkable Mac version called *MacTierra*. It's on this issue's Cover CD.

Mac software is available in great abundance at the Macintosh Artificial Life Software site – that's what it's there for. In addition to *MacTierra* and *Vivarium*, you'll find programs like *Neoterics*, *Trevista*, *CopyCats*, and *Bugs*. All excellent stuff.

Numerous Web sites demonstrate on-line "applet" versions of A-life software. The Live Artificial Life page has a whole collection of them framed. Log on and you can watch cellular automata grow, see Bots walk around or watch *Swarm's* miniature creatures swim around together in a frame.

Finally, of course, there's plenty of information on artificial life in general to be found round the Web. An essential stop if you're looking for software is Zooland. It has links to numerous Mac A-life resources. More academic in approach are sites like Artificial Life Online, Autonomous Agents Group and a paper called *Artificial-Life Simulators and Their Applications*. Log on if you feel the urge to research A-life further.



Another image from the *Tierra* video. Here we see a red parasite that's in the process of replicating itself by stealing processor power from other electronic creatures.

Artificial Life Online comes to you from Santa Fe New Mexico, a world centre of A-life excellence.

Internet A-life Index

ALife Garden – http://www.cisnet.or.jp/~alifeg/
Artificial Life Online – http://alife.santefe.edu/
Artificial Life Simulations and Their Applications – http://alife.santefe.edu/alife/topics/simulators/dret/dret.html
Autonomous Agents Group (MIT) – http://agents.www.media.mit.edu/groups/agents/
The Live Artificial Life Page – httpL//www.fusebox.com/cb/alife.html
MacTierra – http://www.santefe.edu/~smfr/mactierra.html
Technosphere – http://194.80.30.14/technosphere/index.html
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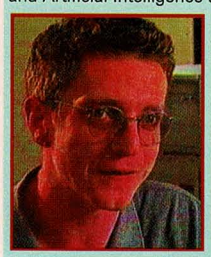
Zooland – http://alife.santefe.edu:80/~joke/zooland/

tions? Millennium Interactive already has plans to use neural network brains, similar to the ones used in *Creatures*, in an intelligent Internet search agent. You would train such an agent by chastising or rewarding it according to the quality of the information it collected for you. Eventually, it would become completely in tune with your needs.

According to Anil Malhotra, this agent might do its searching during periods when servers are quiet. So, like the code worms in *Tierra*, it will be most active at night, when fewer people are using their machines. Perhaps you'll be able to get up in the morning to find a personalised newspaper waiting for you on your Mac Desktop, containing all the latest stories pertaining to your personal and professional interests. Wonder what it would put on page three...?

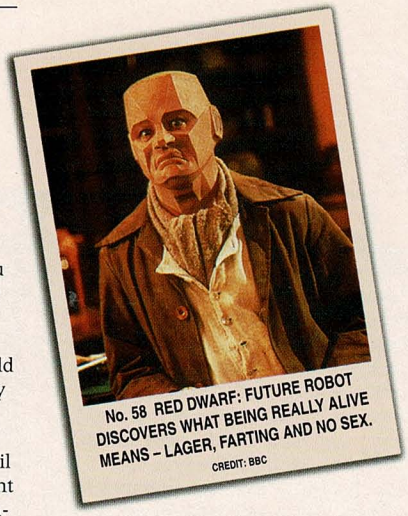
David Cliff

David Cliff is Lecturer in Computer Science and Artificial Intelligence at the University of Sussex in Brighton. He has worked in artificial life for some eight years creating computational models of insect nervous systems, developing neural networks to control robot systems and working on ways of adapting A-life software for entertainment purposes. We thank David for his help with this feature.



Stepping out

What about life away from your Mac? According to Dr David Cliff, there's a good chance we'll one day have intelligent agents residing in our TV sets. Once it learned what you enjoyed, your agent could help you choose what to watch from not just 40 or 50 satellite channels, but perhaps a thousand digital channels. It might alert you to shows it thinks you'd be interested in, or tape them for you, possibly without you even having to ask it to do so – a trick that today's VCRs will never be able to master.



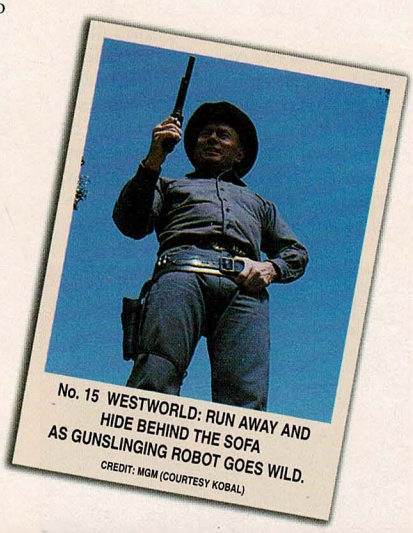
No. 58 RED DWARF: FUTURE ROBOT DISCOVERS WHAT BEING REALLY ALIVE MEANS – LAGER, FARTING AND NO SEX.
CREDIT: BBC

Perhaps artificial agents could make you a safer and better driver. Dr Cliff speculates that an A-life co-driver could learn your individual driving style, and then very gently correct your worst habits – or warn you only if you were driving uncharacteristically fast or consistently making a series of unusual or dangerous errors.

Meanwhile, Toby Simpson at Millennium Interactive, who is working on *Creatures* and CyberLife, envisages A-life traffic lights. "A traffic policeman is able to control traffic better than a pair of traffic lights," he says. "Traffic lights don't respond to traffic changes, when there's a flower show or a fair or something. Biological organisms can learn new things. In the case of intelligent traffic lights, they would care very deeply about making traffic flow. If their instinct were to feel 'pain' as the queues got bigger, so it would be in their best interest to learn how to achieve a lessening queue.

"And even better, all the individual traffic lights could then talk to each other. The traffic control system in a town or a city could become one big biological system that learns and adapts itself to any problems."

Further into the smoggy future, how about a vacuum cleaner that lives in a cupboard under your stairs and comes out at night to silently clean the house? Perhaps your whole house could be controlled by a neural network in your



No. 15 WESTWORLD: RUN AWAY AND HIDE BEHIND THE SOFA AS GUNSLINGING ROBOT GOES WILD.
CREDIT: MGM (COURTESY KOBAL)

Art life

A few years ago, artists were fascinated by the patterns created by fractal mathematics. Now they're drawing on artificial life.

One of Britain's foremost computer artists, William Latham, is famous for his work in the field of organic art. Ever since his days as a student, Latham has been interested in the idea of "breeding" shapes. He started off with pen and paper, but very soon the multiplicity of forms he was coming up with necessitated the use of a computer. Between 1988 and 1994, Latham worked as a Research Fellow at IBM, where with mathematician Stephen Todd he wrote a program called *Mutator*.

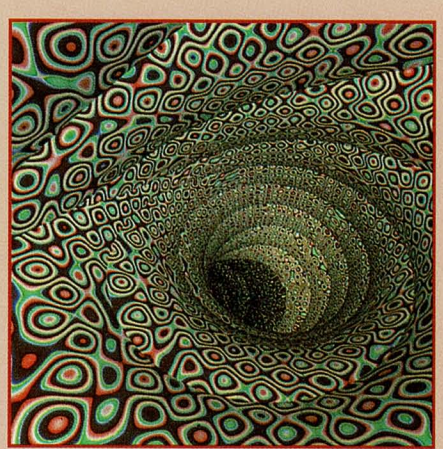
With *Mutator*, Latham can create interesting, otherworldly shapes by breeding colour and form – that is, combining genes from four, five, six, even ten parents. The process is evolutionary with the artist acting as a sort of aesthetic predator, eliminating unwanted or ugly offspring, or using a genetic algorithm that determines which shapes live and which ones die according to defined criteria, or, introducing mutation factors.

Then of course there are the forms themselves. Again, Latham borrows from nature. The shapes being melded together include bone structures, ammonite shell patterns, fractal ferns, vertebrae bones, palm fronds, branches, rib structures, leaf shapes, tree growth structures, tentacles and so on. The works really can look quite stunning. Earlier this year Latham released a screensaver creator for Windows which enables PC users to generate patterns and 3D animations much like his own. It's called *Organic Art* and we think it should be on the Mac.

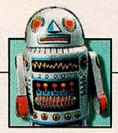
Another renowned A-life artist is Karl Sims from MIT. Sims is interested in both animation and the breeding of forms. In 1991, he produced an award-winning computer animation called *Panspermia*, in which a seed crash-lands on a planet and germinates. It grows, spreading itself across the land mass. Tangled forests arise, covering the planet. Eventually, it develops cannon-like seed pods, and when these explode new seeds are launched into space to take over new planets.

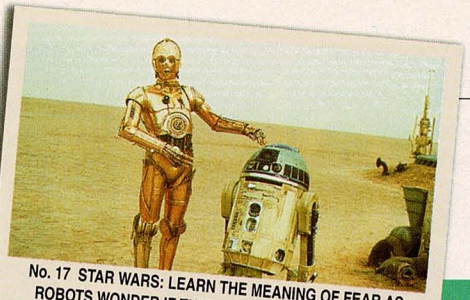
To produce his animation, Sims didn't use conventional software. Instead, he wrote plant growing simulations containing 20 genetic factors as the basis for foliage development. These covered fractal limits, branching factors, scaling and so on. Eventually, he rendered the

Computer creator William Latham doesn't make art – he breeds it using artificial life equations.



Latham blends natural forms like shells and plant shapes to make something familiar yet alien.





No. 17 STAR WARS: LEARN THE MEANING OF FEAR AS ROBOTS WONDER IF THEY'LL BE IN THE NEW FILMS.
CREDIT: LUCASFILM/20TH CENTURY FOX (COURTESY KOBAL)

Virtual sheepdog

Sounds incredible, but it's true: we've heard down the wire that one A-life researcher has come up with the dream of building an artificial sheepdog. Dr David Cliff, who brought us this news, explains what's so interesting about this off-the-wall project.

"The amount of intelligence in a dog is not normally thought of as high, but when you think about all the things you'd have to specify an artificial sheepdog to be able to do, it rapidly becomes a very, very difficult task.

"They have to cope with all different lighting conditions, different weather, different types of ground – bumpy ground or flat ground, and also mushy, muddy ground or hard ground that's been baked dry in the sun. And they have to be able to filter out the whistles of the sheepdog trainer from other noises, and they have to be able to identify the rough direction in which different sheep are going in order to predict their movements and interfere with them.

"Specifying all those kinds of conditions in a rule-based system, where you have to think of every eventuality in advance, can be very, very difficult. So," Dr Cliff concludes, "it might be that if you wanted to build a robot sheepdog, these artificial life technologies – where, when you're issuing a punishment or reward, the system is adapting itself – might be a more appropriate technology to employ."

Wonder if it will be allowed to compete in *One Man and his Dog*?

No. 18 DR WHO: SWOON AS COMPUTERISED CANINE BECOMES A TIME LORD'S BEST FRIEND.
CREDIT: BBC

Mac – security systems, climate controls, coffee machines, cleaning robots, curtains, lighting and so on. Unbelievable, you say? In the United States, some office buildings are already run by central AI systems.

But what about the Frankenstein factor? Could all this A-life technology run away with itself, and perhaps even turn hostile? Could your TeasMade develop an attitude problem and spit boiling water at you, a disgruntled traffic light decide it would rather be a Christmas tree, your K9 start staining the carpets? Could A-life become so sophisticated that, like the Replicants in *Blade Runner*, it starts resenting you for being more real than it? And could it start building bigger, meaner new generations of itself, as in the *Terminator* movies?

Dr David Cliff thinks not. "The prospect of machines which have the capability to build copies of themselves as machines is probably not impossible in principle – there's no theoretical reason why it couldn't be done – but the complexity of achieving that is just outrageous. The cost of doing so would require some billionaire to just go mad and devote all of his or her funds to the task, and even then they would probably fail. I think for economic reasons it's unlikely ever to happen. Maybe someone will build one out of Lego to prove that it can be done."

And what about the hostility? "In almost all serious science or engineering," continues Dr Cliff, "there are professional bodies who have codes of ethics and standards of practice which require that the output from the science or engineering is not dangerous to humans. This is why engineers build bridges that don't fall down, or every now and then people build space rockets that don't blow up. Occasionally, things go wrong," he concludes, "but I think self-replicating machines that are talked about in some nightmarish science fiction fantasy will always remain fantasy."

Besides, there's no more reason to expect a dystopia than an A-life utopia. For every hostile Replicant, there's an R2D2 or C3PO. SF visions are full of brilliant, kind and noble artificial beings, from *Star Trek's* Data to Isaac Asimov's Adam Link to... well, *Red Dwarf's* Kryten.

Okay, so perhaps there's room for a *little* scepticism...

MF

Read about it

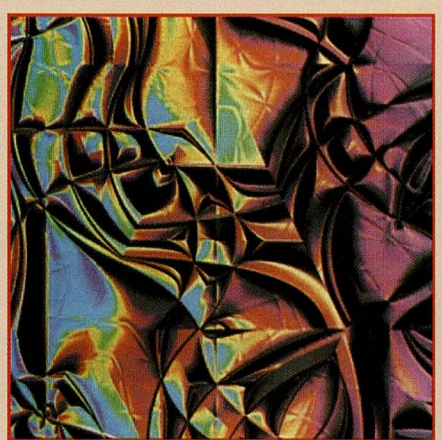
Check out Steven Levy's *Artificial Life: The Quest for a New Creation*. Published by Penguin and costing £8.99, this will give you the entire rundown on the history of artificial life. Theories from the top minds are discussed, alongside the most important software.

finished work in 3D. Hence, A-life techniques were used to generate the animation.

In another work entitled *Primordial Dance*, Sims used a technique called artificial evolution to generate textures, colours and shapes. Like Latham, Sims defines the system and breeds the artwork, keeping the pieces he likes to breed with others, killing off the ones he doesn't. More recently, Sims has been working on installations which you can use to breed artwork by choosing your favourite pieces from big screens then employing them to propagate new generations.

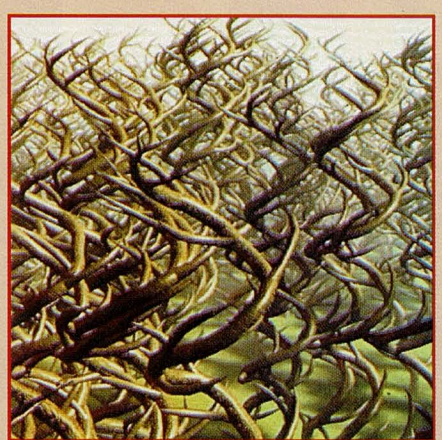
Of equal interest are the patterns created by flocking birds, herds or antelope on the hoof and the glidingly fluid motion of large schools of fish. Simulations of these natural phenomena have been achieved using software models such as *Boids*, by Craig Reynolds. In this program, each individual fish or bird observes and reacts to the other individuals around it as well as the environment. Combined, the members of the flock determine its overall behaviour as they fly around obstacles, change direction and react to other flocks.

The effects can be compelling and have been used to animate group behaviour in movies. In *Batman Returns*, the movement of a flock of bats was choreographed using software like *Boids* rather than artist-drawn animation. Similarly, the stampeding wildebeest in Disney's *Lion King* moved according to a software model.



Karl Sims' *Primordial Dance* relied on a natural selection process to achieve its results.

Sims' *Panspermia* is a stunning animation where life blossoms and evolves on an alien world.



Panspermia was developed by planting the seeds for life within a computer and letting them grow.

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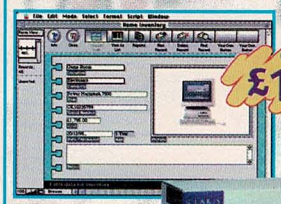

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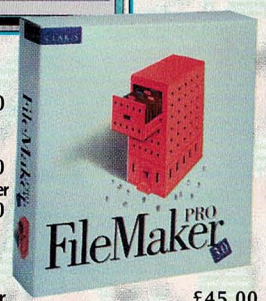

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COOL	**Nikon CoolScan II** (35mm slide scanner)	£995.00
UVSA	**Umax Vista S6** (600dpi)	£269.00
UMPLP	**Umax PowerLook II Pro** (36bit 1200*600dpi)	£1599.00
OMPP	**OmniPage Pro 6.0** (OCR directly into applications)	£369.00
PPVX	**PaperPort VX** (greyscale desktop OCR and scanning)	£249.00

COMMUNICATIONS

MROL	**Motorola 3400** (MacUser Best Buy 28.8 baud)	£125.00
SPR5	**Sportster FaxModem** (28,800 baud, BABT approved)	£149.00
SPEA	**SupraExpress 33.6** (ADB powered 33.6 baud)	£145.00
SPRM	**Supra FaxModem** (top quality, Grp III 28.8 baud)	£179.00
TLPP	**TelePort Platinum** (28.8 modem from Global Village)	£169.00

SCANMAKER

Successor to the best selling scanner on the market, **Microtek's ScanMaker E3** offers true 300 by 600 dpi 24 bit colour scanning at a ridiculously low price. This single pass A4 unit will also interpolate up to a whopping 1200 by 1200 dpi for ultra high resolution work. Included completely free is OmniPage Direct 2.0 OCR which will let you scan a page of text and turn it into a text file which you can open up in a word processor. If you don't already own a copy of Photoshop you can choose to buy the full version for an additional £149.00 or the cut down Photoshop LE version, which offers no colour separation abilities, for only £45.00 – **version 3.0** in both cases! You can also add a transparency unit for £279.00. It's the perfect solution for home or small business Desktop Publishing.

only £245.00

For higher quality publishing, the **ScanMaker E6** supplies even better results. It offers 30bit colour at 600 by 1200 true resolution, interpolating up to 4800 dpi.

only £349.00

DATA STORAGE

only Quantum Drives used

CAPACITY	D2	APPLE	INTERNAL
1 Gig	£275.00	£315.00	£215.00
2 Gig	£415.00	£649.00	£365.00
4 Gig	£899.00		£725.00
9 Gig	£1999.00		

REMOVABLE DRIVES

Syquest EZ135 £99.00
Iomega ZIP £135.00
Jaz 1 Gig £399.00

CE2A	**d2 200Mb Syquest Drive** (inc cart)	£325.00
CDD2H	**d2 Quad Speed CD ROM Drive**	£175.00
D2DJ	**d2 4/16Gb DAT Drive**	£949.00
CDWP	**Pinnacle CD Writer**	£595.00
PN2A	**Pinnacle 2.6Gb Optical Drive**	£1095.00

MacLine Policy

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*All goods are sent by a courier service. A signature will be required on delivery.
*Same day delivery in London area is available.
*Defective goods are replaced immediately, subject to availability.
*Prices are correct at the time of going to press. E&OE. We cannot guarantee the prices printed here as they are out of our control and will occasionally be higher or lower. Please check prices with us before placing an order.
*Refunds will only be given on unopened packages that are returned within 7 days of receipt.

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MITSUBISHI

Auto-Scanning Monitors With Unique DIAMONDTRON CRT And The First and Finest Digital Chassis.

With the advent of graphical operating systems and sophisticated software, applications have called for bigger monitor screens capable of supporting higher resolutions and providing a brighter picture, while maintaining excellent image integrity. Mitsubishi's response was to develop a new CRT type, the DIAMONDTRON, to meet the needs of demanding graphic applications. This CRT's aperture grille mask design permits a greater portion of the electron beams to pass through the structure, resulting in a brighter picture. Mitsubishi's unique NX-DBF (Dynamic Beam Forming) electron gun enhances and improves screen resolution, maintains beam focus from center to edge, and increases corner resolution up to 40 percent.

Both monitors include the following features:

- Combines the best CRT designs all in one CRT: DIAMONDTRON
- Incorporates Mitsubishi's new Digital Chassis design
- Utilizes more advanced performance features such as Auto Calibration, Moiré Cancellation and On-Screen Displays (OSD)
- Dual input switching regardless of platform

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£25.00 joining fee and £12.00 per month
...and joining fee is waived when you purchase a modem.

• The MacLine Internet Gateway is set up specifically for UK Mac users. On our server you will find applications that will allow you to access different parts of the Internet in different ways. When you join we will provide you with a unique E-Mail address which will give you the power to communicate across the world for the cost of a local call.
• More importantly we understand the problems of connecting a Mac to the Internet and can help you navigate through the maze of IP, TCC/IP and MacTCP. Hey, it's easy when you know how!

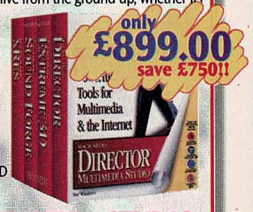
FULL INTERNET ACCESS FOR MAC USERS! WORLD-WIDE-WEB, EMAIL, FTP, GOPHER

MACROMEDIA

GRAPHIC DESIGN STUDIO

Macromedia's FreeHand Graphics Studio is a bundle of four of the most innovative and powerful creative software packages around. With a complete set of high-perfomance tools for graphic arts and design, it enables you to turn your ideas into reality using FreeHand's dynamic illustration, design and page layout capabilities. Produce CAD-accurate 3D models, animations and renderings with Extreme 3D. Composite, edit and manipulate your hi-res images with xRes, without the need for large RAM requirements; and add hundreds of variations to your existing font library with Fontographer. FreeHand Graphics Studio 2.0 also contains clip art, photography, 3D models, and fonts.

The Macromedia Director Multimedia Studio is a bundle of five of the most popular multimedia tools in a single package making professional multimedia production simpler and more cost effective.The Studio, with its multimedia authoring environment and fully integrated tools will bring your projects alive from the ground up, whether its images, sound, 3D animation, or multimedia on the Web, without any problems of incompatible software. With a compatible file format between Mac and Windows you'll only have to author your project once, moreover you can deliver applications to OS/2, 3DPO, OS/9, Enhanced CD and the World Wide Web.



DIRECTOR MULTIMEDIA STUDIO

NETWORKING

ANET	**LocalTalk (AppleTalk) connector kits**	£14.00
FTNP	**PhoneNet connector kits**	£12.00
FEHA	**EtherLan Hub 9** (9 port Ethernet 10baseT Hub)	£65.00
FAIR	**Farallon AirDock** (Infra Red LocalTalk connector)	£69.00
QKML	**QuickMail 3.6 10 User** (powerful, flexible E-Mail)	£349.00
ASPA	**AsantePrint** (Ethernet to AppleTalk printer router)	£249.00
ETWx	**EtherWave** (daisychain Ethernet from Farallon)	£165.00
	Ethernet Cards & Tranceivers (Asante, Shiva, Focus)	from £25.00

MULTIMEDIA

MRPHB	**Morph 2.5** (morph from one QT movie to another)	£79.00
MDRT	**MacroMedia Director 5.0** (key multimedia tool)	769.00
PRMR	**Premiere 4.2** (Adobe's brilliant QuickTime editor)	£399.00
VIDD	**Video Director 2.0** (edit your home videotapes)	£85.00

PC COMPATIBILITY

DSMT	**DOS Mounter 95** (read/write PC floppies on your Mac)	£55.00
MLPT	**MacLink Pro** (best Mac/PC link with100's translators)	£105.00
PCEX	**PC Exchange** (Apple's own brand software)	£35.00
SFWD	**SoftWindows 3.0** (Windows 3 for PowerMac)	£199.00
SFWE	**SoftWindows 95** (Windows 95 for PowerMac)	£235.00

INTERNET

4DFI	**4D Internet Server** (based on the fastest database around)	£109.00
AINK	**Apple Internet Connection Kit** (available on CD ROM only)	£49.00
HMPG	**Claris Home Page** (excellent Web Page creator)	£79.00
BKS010	**Internet Starter Kit** (the best book)	£27.50
CLEM	**Emailer** (great mail program, supports many services)	£45.00
EDRAA	**Eudora 2.1** (most popular mail package)	£59.00
INET	**Internet Access Kit** (Internet dial up, email, Web, FTP)	£25.00
NTSCB	**NetScape Navigator** (best browser, includes manuals)	£59.00
NUTW	**Now Web Publisher** (put diary/schedules on the net)	£215.00
PGML	**PageMill** (the WYSIWYG way to create web pages)	£65.00
STML	**SiteMill** (eases maintenance of Web Sites)	£139.00
WBBY	**Web Buddy** (makes your surfing easier)	£45.00

POWERBOOK

CCPx	**Carry Case** (Apple or third party)	from £19.00
CPPC	**Car Power Adaptor** (plug in to the car lighter socket)	£49.00
PCNA	**Ethernet Card** (Farallon 10BaseT PCMCIA card)	£185.00
FEVC	**MV16** (16 bit colour/10BaseT Ethernet for 5300/190s)	£155.00
GPCA	**PowerPort Platinum** (PCMCIA 28.8 fax modem)	£239.00
TPCM	**TDK Modem** (PCMCIA 28.8 fax modem)	£225.00

ACCESSORIES

	Cables, Toners and Ink Cartridges (for laser & inkjet printers)	call
KBCF	**Extended Keyboard** (15 function keys, numeric pad)	£49.00
QCKM	**QuickCam** (mono video camera for QuickTime)	£79.00
QCKL	**Colour QuickCam** (colour video camera for QuickTime)	£159.00
AGMJ	**JetStick** (joystick for the control you've always wanted)	£45.00
SESY	**Security Systems** (is your Mac vulnerable to theft?)	from £29.00
TMADD	**Thinking Mouse** (4 button with software)	£59.00
TMADB	**Turbo Mouse** (top selling trackball)	£65.00
WCU6	**Wacom ArtPad II A6** (handy stylus and tablet, inc Dabbler)	£135.00
WCU5	**Wacom UltraPad A5** (stylus and tablet)	£259.00
WCU4	**Wacom UltraPad A4** (professional stylus and tablet)	£359.00
VR256	**256K VRAM Chips** (adds more colours)	£15.00
VR512	**512K VRAM Chips** (adds more colours)	£25.00
VR9A	**1Mb VRAM DIMM** (for 7200, 7500, 8500)	£45.00
VR9B	**2Mb VRAM DIMM** (for 7200, 7500, 8500)	£139.00

PROGRAMMING

HYPC	**HyperCard 2.3** (new version, more power)	£95.00
CDWG	**Metrowerks Code Warrior Gold v.9** (PowerMac compiler)	£255.00
CDWJ	**Discover Programming with JAVA**	£69.00
THKC	**Think C 6.0** (the leading Mac app development tool)	£185.00
THKP	**Think Pascal 4.0** (excellent developer level compiler)	£165.00
FTBS	**FutureBasic II** (the best Basic for Mac, inc. PG Pro)	£179.00

UTILITIES

PRODUCTIVITY ENHANCERS, FILE & DISK MANAGEMENT

ATMC	**ATM Deluxe** (manages and anti aliases fonts)	£49.00
EASE	**At Ease 3.0** (secure Finder replacement)	£35.00
INVU	**Conflict Catcher 3.0** (INIT manager and more)	£55.00
NDBP	**DiskDoubler Pro** (Disk,Auto and Copy Doubler)	£49.00
EXPO	**Exposure Pro** (professional screen capture utility)	£75.00
HDTK	**Hard Disk Toolkit** (the best formatter and checker)	£110.00
NUME	**Norton Utilities 3.2** (best selling utilities package)	£65.00
NOWU	**Now Utilities 6.0** (suite of essential utilities)	£59.00
POPF	**PopUpFolder** (view folder contents with submenus)	£30.00
QCKY	**QuicKeys 3.1** (macro maker, time saver utility)	special
RAMD	**RamDoubler** (actually doubles your available RAM!)	£45.00
SPED	**SpeedDoubler** (greatly improves performance)	£45.00
RASP	**RamDoubler & SpeedDoubler Bundle**	£65.00
THDR	**SpellCatcher** (spellchecker, works in all applications)	£45.00
SFDL	**Stuffit DeLuxe** (famous file compression program)	£65.00
SUIT	**Suitcase 3.0** (manage your font menus)	£49.00

PREVENTION & CURE DEPT.

OPDT	**DeskTape** (treats DAT as if it were a 2Gb drive)	£195.00
MPR1	**MacPrefect** (secures most aspects of the Finder)	£30.00
PRSB	**Personal Backup** (best value backup on the market)	£32.00
RTSP	**Retrospect 3.0** (powerful archival backup)	from £129.00
SAM	**SAM 4.0** (Symantec's anti virus utility)	£45.00
VIRX	**Virex 5.66** (best virus tracer & eradicator of all)	£60.00

SCREEN SAVERS

AFDK	**After Dark 3.0** best selling screen saver)	£18.00
LTSS	**Looney Tunes** (famous cartoon screensaver)	£17.00
TTWCD	**Totally Twisted** (outrageous and irreverant, CD only)	£17.00

EDUCATION

UP TO 12 YEARS OLD — inc VAT (exVAT)

AMAN	**Amazing Animation** (cool animation for kids)	£64.63 (£45)
KDMH	**KidsMath** (takes kids from counting to arithmetic)	£34.08 (£29)
KDPX	**KidPix II** (wonderful paint program with sound effects)	£34.08 (£29)
NMBM	**NumberMaze** (award winning arithmetic tutor)	£41.03 (£35)
RDMZ	**ReadingMaze** (letter recognition to sentences)	£41.03 (£35)

FROM 10 YEARS and UP — inc VAT (exVAT)

TYEN	**Typing Instructor** (good training from basics to touch)	£29.38 (£25)
WIWD	**Where in World is Carmen DeLuxe** (geography based)	£34.08 (£29)

CD ROM

EDUCATION — inc VAT (exVAT)

ARTT	**Arthur's Teacher Trouble** (interactive story book)	£34.08 (£29)
ARTB	**Arthur's Birthday** (more Arthur)	£34.08 (£29)
CRWRCD	**Creative Writer** (DTP for kids)	£25.85 (£22)
FNARCD	**Fine Artist** (great fun paint program)	£25.85 (£22)
LJZCD	**Logical Journey of the Zoombinies** (rave reviewed)	£29.38 (£25)
HHHS	**Harry and the Haunted House** (the new best seller)	£34.08 (£29)
KDPCD	**KidPix Studio** (KidPix plus animation)	£29.38 (£25)
WTSCD	**Mr Wonder's Toyshop** (storytelling, music, rhyme)	£29.38 (£25)
RUFF	**Ruff's Bone** (adventures with Ruff the dog)	£34.08 (£29)
HARECD	**Tortoise and the Hare** (the epic race)	£34.08 (£29)

REFERENCE — inc VAT (exVAT)

3DAT	**3D Atlas** (simply wonderful)	£41.03 (£35)
MAGCD	**Art Gallery** (Microsoft's tour of the National)	£45.83 (£39)
BKSCD	**Book Shelf** (superb, for everyday reference needs)	£45.83 (£39)
CINI	**Cinemania 95** (19000 movie reviews and more)	£29.38 (£25)
DINO	**Dinosaurs** (the "must have" CD of the year)	£29.38 (£25)
NCRT	**Encarta '96** (fantastic multimedia encyclopedia)	£64.63 (£45)
EOFCD	**Encyclopedia of Science Fiction** (a complete reference)	£34.08 (£29)
GRLCD	**Groliers Encylopaedia 95** (21 vols, 9 million words!)	£45.83 (£39)
LLVCD	**Le Louvre** (tour the famous Paris Gallery)	£41.03 (£35)
MICD	**Musical Instruments** (Microsoft's excellent entry)	£29.38 (£25)
MPCCD	**Monty Python's Complete Waste of Time** (not!)	£34.08 (£29)
MPQCD	**Monty Python's Quest for the Holy Grail**	£34.08 (£29)
OEDCD	**Oxford English Dictionary** (the whole thing)	£264.38 (£225)
REDCD	**Red Shift** (superb astronomy program)	£41.13 (£35)
UHBCD	**Ultimate Human Body** (Dorling Kindersly's one)	£34.08 (£29)

ENTERTAINMENT

BEST SELLING GAMES ON CD — inc VAT (exVAT)

1)	MRTHCD	**Marathon II** (can you resist?)	£64.63 (£45)
2)	DOM2	**Doom II** (you may have heard of this game!)	£41.13 (£35)
3)	MYST	**MYST** (magical mystery adventure)	£41.13 (£35)
4)	PRPCD	**Prince of Persia I & II** (two of the best ever)	£22.33 (£19)
5)	ALRC	**Al Unser Jr's Racing** (arcade car racing)	£25.85 (£22)
6)	DKFCD	**Dark Forces** (brilliant game based on Star Wars)	£41.13 (£35)
7)	PGA3	**PGA Golf III** (more challenging games)	£41.13 (£35)
8)	SIMCC	**Sim City 2000 Collection** (with extra goodies)	£45.83 (£39)
9)	PLGCD	**Links Pro Golf** (features network play)	£34.08 (£29)

BEST SELLING GAMES ON FLOPPY DISK — inc VAT (exVAT)

1)	ERIC	**Eric's Ultimate Solitaire** (a dozen patience games)	£41.13 (£35)
2)	A10A	**A10 Attack** (the best flight sim around)	£45.83 (£39)
3)	F18H	**F/A18 Hornet** (from the creators of Hellcats)	£57.58 (£49)
4)	ITG10	**10 Intelligent Strategy Games** (backgammon...)	£34.08 (£29)
5)	BRDG	**Bridge** (not the Golden Gate but the card game)	£28.20 (£24)
6)	SIMC2	**Sim City 2000** (design and run your own city)	£34.08 (£29)
7)	FLSM	**Microsoft Flight Simulator** (realistic, accurate)	£41.13 (£35)
8)	LEM3	**Lemmings/Oh No! More Lemmings Bundle**	£25.85 (£22)

NEW GAMES ON CD — inc VAT (exVAT)

STJCD	**Star Trek - Judgement Rites** ("one hell of a sequel!")	£37.60 (£32)
BRTM	**Buried in Time** (sequel to Journeyman Project)	£34.08 (£29)
IFDCD	**In the First Degree** (play a murder prosecutor)	£41.13 (£35)

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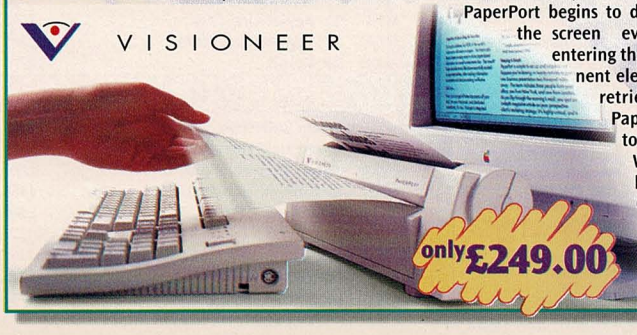
Okay, so you have no trouble getting paper out of your Mac. But what do you do with the articles, letters, receipts, and business cards—the important papers—that cross your desk every day? You use PaperPort, that's what! The first truly simple, super-small input device that converts your paper documents into electronic ones. Always ready to go. Just plug PaperPort into your Mac's printer or modem port and then feed in a piece of paper. PaperPort grabs the paper, scans it and launches the software automatically—there isn't even an ON button! Instantly useful. At six seconds per page, PaperPort begins to display your documents on the screen even before you're through entering them! Now you've got permanent electronic copies that you can retrieve at any time, using PaperPort's easy-to-use search tools. Streamline your work. With PaperPort's direct links to word processors, OCR software (included!), printers and fax modems, you can file, edit, annotate, print and send your documents directly to others.



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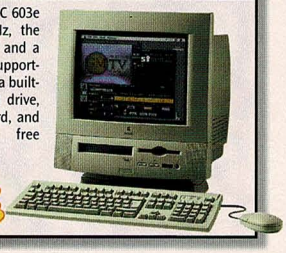
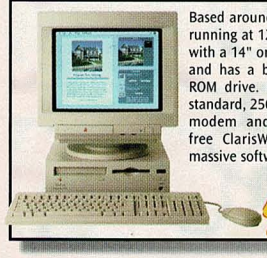
Based around a Power PC 603e chip running at 100MHz, the 5260 combines the CPU and a 15" multiscan monitor supporting 32,000 colours. It has a built-in quad speed CD ROM drive, 12Mb of RAM as standard, and includes completely free ClarisWorks version 3.0.



only £1095.00

6320 12/1.2Gb/CD/Monitor



Based around a Power PC 603e chip running at 120MHz, the 6320 comes with a 14" or 15" multiscan monitor and has a built-in quad speed CD ROM drive. It has 8Mb of RAM as standard, 256k Cache, a built-in 14.4 modem and includes completely free ClarisWorks version 3.0 and massive software bundle.

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•PowerPC 604 at 180 MHz •Integrated FPU, 32K cache •16MB of RAM, expandable to 512MB •256K level 2 cache •1.2GB SCSI hard disk •8-speed CD-ROM •Three PCI expansion slots •Ethernet •Composite and S-video video input and output •24-bit video input •24-bit video output • Support for NTSC and PAL •2MB of VRAM, expandable to 4MB •Support for display resolutions of up to 1,280 by 1,024 pixels •24-bit color up to 1,152- by 870-pixel resolution •Refresh rate of up to 75 Hz

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•PowerPC 604 at 200 MHz •Integrated FPU and 32K cache •High-speed system bus (up to 50 MHz) •32MB of RAM, expandable to 768MB via 12 DIMM sockets •4MB of ROM •512K level 2 cache •Internal 2GB high-performance SCSI hard disk •Internal 8-speed CD-ROM drive •Six PCI expansion slots •Ethernet •16-bit stereo sound input and output ports •2MB of VRAM, expandable to 4MB •Support for display resolutions of up to 1,280 by 1,024 pixels •24-bit color up to 1,152- by 870-pixel resolution •Refresh rate of up to 75 Hz •Third-party displays, including VGA and SVGA monitors

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5260A **Performa 5260 12/800/CD**/Clarisworks . . £1095.00

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5400B **Performa 5400/180 16/1.6Gb/8*CD/TV 28.8 Modem *(Family Mac)*** £1725.00

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6400C **Performa 6400/200 16/2.4Gb/8*CD/28.8Modem/14" Multiple Scan Display *(Home Office)*** £1865.00
6400D **Performa 6400/180 16/2.4Gb/8*CD/28.8Modem/15" AudioVisual Display *(Home Office)*** £1915.00

*all Performas include a **genuine** AppleDesign Extended Keyboard and Apple Mouse.*

"& software" refers to: At Ease, ClarisWorks 3.0, HyperCard Player, Mavis Beacon Typing, Millies Math House, MacGallery ClickArt, Spin Doctor, SuperMaze Wars, Thinkin' Things 2, Apple Internet Connectivity Kit, System 7.5.1, The Way things Work, Grolier MM Encyclopedia, Making Music, Myst, In Bred with RedNex, Mega Rock Rap & Roll, Daedalus Encounter, Aladdin Activity Centre, Lion King Story Book, Toy Story Preview - FREE!

POWER MACs

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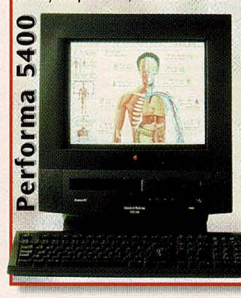
SOFTWARE - Mac OS 7.5.3, The Best of European Soccer, Apple Telecom 3.0, The Ultimate Human Body, Apple Video Player, Aladdin Activity Centre, 120 Letters, Lion King Story Book, Acrobat Reader, Toy Story Preview, At Ease, Grolier MultiMedia Encyclopaedia, ClarisWorks4.0, Internet Connection Kit, MacLink Plus, Performa Clickart, Full Throttle, HyperCard Player, Descent, Thinkin' Things 3, Sammy's Science House, PowerPete.



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SOFTWARE - Mac OS 7.5.3, Best of European Soccer, Apple Telecom 3.0, Ultimate Human Body, Apple Video Player, Aladdin Activity Centre, Lion King Story Book, Acrobat Reader, Toy Story Preview, At Ease, Grolier MultiMedia Encyclopaedia, ClarisWorks4.0, Claris Impact, Claris Organiser, Internet Connection Kit, MacLink Plus, Full Throttle, HyperCard Player, Descent, Performa Clickart, Thinkin' Things 3, Sammy's Science House, PowerPete.

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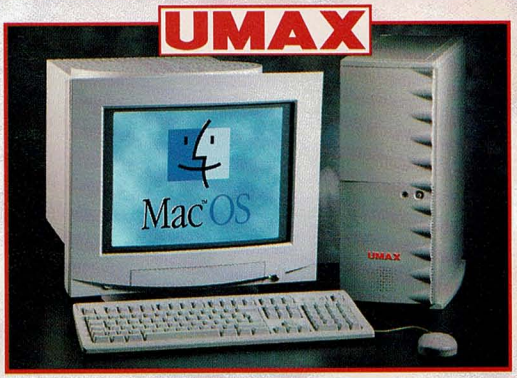

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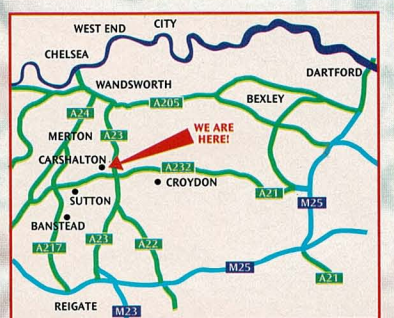

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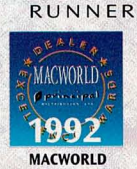

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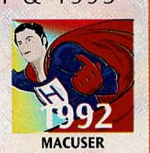

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Who needs DTP?

Do you really need all the features of an expensive, RAM-hungry, hard-to-learn desktop publishing package? Alistair Dabbs and Alex Summersby reveal how much you can do with your humble word processor.

The desktop publisher sits at his PowerMac 9500/200, making the final adjustments to his on-screen layout. He adds in a cut-out scan, and the text – which flows across multiple columns of different widths – runs around the graphic, whereupon several filter effects are applied to it. He rotates a logo to 34.6 degrees precisely, and re-kerns a headline by 0.003pt. He hits **[command] P**, and the artwork slowly emerges from his colour proofer, proudly bearing the masthead "Bromley Golf Club News".

It's a ludicrous scenario, of course. Where would a golf club secretary find the time to train himself in *QuarkXPress* or *PageMaker*, or the money to buy them and a top-of-the-range Mac to run them on? Besides, would he really care about 0.003pt kerning adjustments in the two-monthly club newsletter?

The problem is that in the world of Mac desktop publishing (DTP), it tends to be a matter of "all or nothing". Think of a DTP package, and you're thinking about software costing in the region of £500 or more. With each new version, true, you get more and more powerful features – no question about that. But how many of those features do you really need for everyday layout and design projects? Do you really need to invest in the expensive software, the high-spec Mac, the extra RAM, the steep learning curve? Is it worth your club secretary forking out £500 on a program that's going to take weeks to learn and is full of features he'll never use?

DTP? No way!

Admit it: newsletters, fliers and simple posters are likely to be the most complex layouts that most people will ever get involved in. Small-time restaurateurs and café-owners will want a method of renewing their menus on a regular basis. Political activists and carpet cleaners alike will want a cheap way of producing response slips and fliers to litter local residents' letterboxes. Cottage industrialists will want to produce their own letterheads and promotional material. The sociable will want to print out their own party invites and greetings cards.

For such uses, a full-blown DTP package can be overkill. Chances are that most of the time you'll find that a word processing program can do all you need – and more.

Just look at what's available. Virtually every word processing package today supports WYSIWYG (What You See Is What You Get) editing and pagination, with the notable exception of el-cheapo shareware and *SimpleText*. All of them can handle diverse fonts and import all sorts of graphic images. The best of them enable you to lay out tables, as well as adding columns and headlines.

At the same time, the feature list of your average DTP package has shot through the roof. Objects can be positioned on a layout to a level of accuracy measured in microns (thousandths of a millimetre); text can be stretched, distorted and wrapped around itself; you can plug in special publication-tracking systems and even apply *Photoshop* filters to images, without ever leaving the DTP program.

However, you pay for all this functionality – both in the price of the software and in the RAM and hardware you need to run it. Yet unless you have the kind of friends who will refuse a party invitation if the text isn't perfectly tracked or if a picture is a micron out of place, you'll never need 80% of the features in a modern DTP application. And after all, if you're using a typical laser or inkjet printer for your output, the best resolution you can expect is 600dpi, which means that the smallest dot it is capable of printing is over 42 microns in diameter – so what's the point of being accurate to one micron in your layout? ➤

Today, word processors really do offer a credible alternative for basic layout and design tasks. In addition, there are the irresistible price and usability factors: a graphical word processor rarely costs more than a couple of hundred pounds, offers much better help and is likely to come with more ready-made templates than any DTP package. You might already own one of these word processors – you'll almost certainly have a copy of *ClarisWorks* – in which case, getting into DTP will cost you the round sum of nothing.

This doesn't mean that a word processor will suit everyone, or even manage the simplest of DTP tasks on every occasion. But it's worth considering how far a WP can get you before you take the giant leap up to the real (and much more expensive) McCoy.

The contenders

In the word processing corner, we have a solid phalanx of affordable packages, starting with the best-sellers: *Microsoft Word 6.01*, *WordPerfect 3.5.1* (now brought to you by Corel) and *Nisus Writer 4.1.2*. Nibbling at the heels of these graphical WP giants are highly capable alternatives including WorldSoft *WorldWrite 3.0*, and some even older names which tend to be overlooked these days: Akimbo *FullWrite* and Claris *MacWrite*. And of course there's the integrated package *ClarisWorks 4.0*, which boasts an almost DTP-like combination of text-handling and layout functions.

Representing the DTP camp, defending their layout crown, are the current favourites *QuarkXPress 3.32* and *Adobe PageMaker 6.0* (both due to be upgraded quite soon – see "What's New", page 20), as well as the structured document king Adobe *FrameMaker 5.0*. New to the game is the design-rich SoftPress *UniQorn 1.02*, which offers what are, so far, unique graphics capabilities by exploiting Apple's new graphics-handling system QuickDraw GX. And bringing up the rear is Letraset's *ReadySetGo 7*, a now ageing program, but still available.

As you'd expect on the Mac, there are always further alternatives for producing page layouts, from business presentation packages to "instant print" software for the home. And of course you might be laying out electronic "pages" for the World Wide Web. We'll cover all these issues along the way, helping you make the right choice for the kind of job you want to do.

So what tasks do you need your software to be able to tackle? Let's look at the functions you need in the three key areas of layout, text handling and graphics.

Multi-column layout

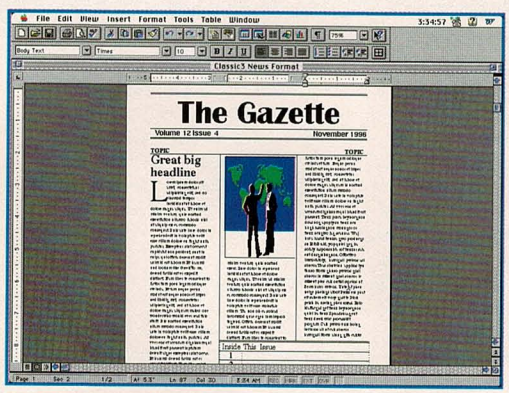
The ability to flow running text across columns is fundamental to DTP, and back in the late '80s was just about the only feature necessary in a program to merit its classification as a DTP package. These days, just about any word processor supports multi-column layouts.

The real question, however, is whether the column widths can be mixed and varied. There's no major problem with, say, producing a newsletter made up of a three-column layout page after page, but this rigidity can be a real restriction. So far, the major up-to-date word processors (and therefore not *MacWrite Pro* or *FullWrite*) are more capable than you might expect, supporting multi-width, multi-column layouts with ease. *ClarisWorks* can manage it too, as we showed you in our *Really Useful DTP Book* back in MACFORMAT 35.

Still, real DTP programs do have the edge here, as you'd expect. It can be fiddly in *QuarkXPress*, because if you want columns of varying widths your only recourse is often to draw them one by one and then chain them together – but dragging out columns to different widths, lengths and positions in any DTP package is an instant and highly interactive method compared to what you have to go through in most word processors. It is often an involved task, littered with dialogues and hands-off settings before you've even started.

PageMaker is strangely word-processor-like when importing a text file, which then flows automatically into preset columns out of your direct control. You can, however, edit everything afterwards. In this respect, it's almost like *ClarisWorks:* the layout part is handled in a different "module" from the actual text editing.

So the decision comes down to this: how much variation and control do you want in your multi-column layouts? For relatively straightforward, newspaper-style layouts, a WP will be perfectly adequate; for more adventurous designs, full-scale DTP is definitely the order of the day.



Word processors beat the columnular layout challenge ages ago, as demonstrated here in *Microsoft Word*. Producing straightforward multiple columns is a snap.

Setting up columns in a DTP package is easier still, enabling you to place multiple stories, multiple widths and runarounds either automatically or by eye.

Instant print

The ideal program for someone wanting to produce desktop published printouts on an occasional basis is one that comes with a lot of ready-made templates. This way, you just open up an appropriate blank file, type in the text you want and import your own images.

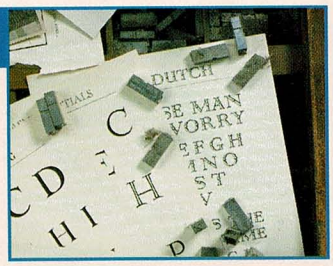
Brøderbund has taken this idea one step further with *Print Shop Deluxe*, an "instant-print" solution that can be further enhanced by companion packs of fonts and clip art. *Print Shop Deluxe* is aimed almost exclusively at the occasional home publisher, meeting typical home needs like school projects and leisure purposes. It could, however, be used with equal effectiveness as a fast layout tool in a semi-professional business environment, for jobs such as newsletters and fliers, or for more specific tasks like decorative dining table namecards.

The two great advantages of this approach are that it's cheap (even the full *Deluxe Companion CD* costs well under £100) and that you don't need to concern yourself (much) with design and layout. So if your golf club secretary is more inclined toward playing a round than sitting at a Mac writing up tournament results, an instant print solution like this will fit the bill nicely. The one important drawback is that you are often limited to using the materials supplied: many of the templates look samey, and not all the designs are guaranteed to please the artistically sensitive.

Over on the PC, where DTP and graphics in general have always been unfamiliar territory, instant print packages have become a real hit. Mainstream software publishers have joined Brøderbund with products like *Corel Print House* and Sierra *Print Artist 3.0*. The former is just a Wizard-based front end to the *CorelDraw* engine. However, now that *CorelDraw* has finally been released for Mac, could a Mac version of *Print House* be on the cards in the not-too-distant future?

■ For a full review of *CorelDraw*, don't miss MACFORMAT 44, on sale on 24 October.

Fonts and styles

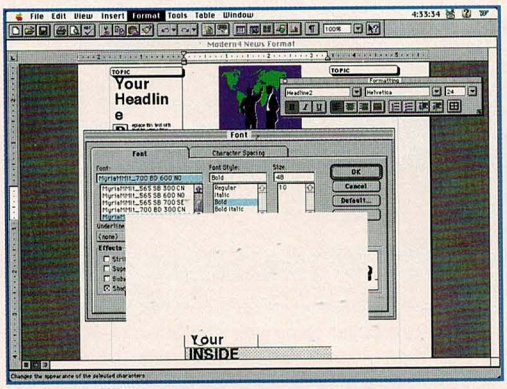


The two areas of font-handling which you are most likely to use in basic DTP are style sheets and distortions like horizontal scaling. The latter is often useful if you want to add variety, especially if you have only a small number of fonts. You can also use it as a cheat to get round both overruns and copy running short, altering the width of characters by a tiny amount. Style sheets are much more important – indeed frequently they are essential.

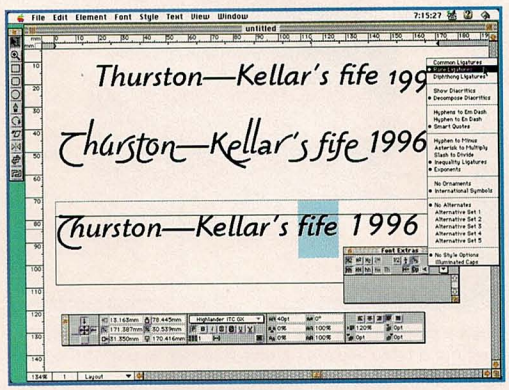
It almost goes without saying that word processors are well provided for when it comes to style sheets. You simply set up a particular style – that is, the font, size and other such properties of a paragraph – and then you can apply this style in its entirety to any other paragraph in one go. You might set up a style in a structured document for the main text, one for subheads, another for footnotes and so on. In a newsletter, you could set up a style for headlines, a style for picture captions, a style for body copy and so on. To this extent, the style sheets in word processors are just as good as those you'll find in any DTP package.

For simple design tasks, this is all you need. For complex tasks like posters or multi-page publications, DTP will serve you better, with more sophisticated style properties, including factors such as kerning (the spacing between pairs of letters) and hyphenation conditions. *UniQorn* is one of the first DTP programs to provide character-based in addition to paragraph-based style sheeting; word processors will have to work hard to catch up to this standard.

Again, DTP has more to offer when it comes to type distortion, whether as built-in horizontal scaling or as add-on extras. *UniQorn's* QuickDraw-GX-based features bring the best type manipulation features (see our review of *UniQorn* in MACFORMAT 40 for an idea of what it can do), but the prospect of GX-based word processors in the near future (such as *GXText*) could blur the distinctions yet further.



When fine-tuning the appearance of text, this is about as good you'll get in a word processor. You can play with 'word art', but not using 10,000-word documents.



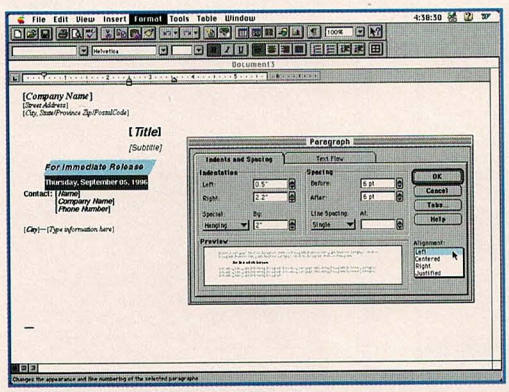
Kerning, tracking and precision leading require a DTP package. Here, *UniQorn* also shows its helpful front end tool, useful for applying QuickDraw GX font effects.

WYSIWYG editing

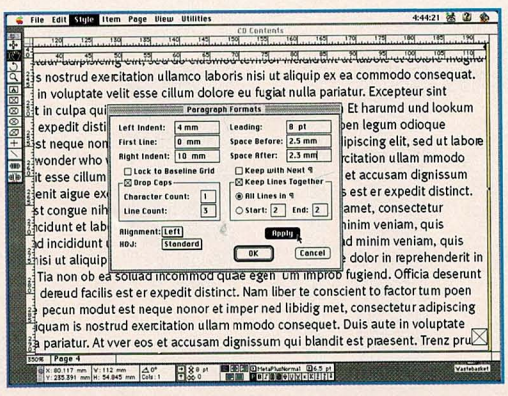
Not as much of a red herring as it sounds, this. We're not just talking about being able to view the fonts, sizes and text styles you've applied to your text, but also the ability to edit the text at the same time. In the bad old days, you had to switch to a special "preview" mode before you could see what your word processed documents would actually look like, but then you couldn't edit them. Today, most (though not all!) word processors enable you to edit documents in this so-called preview mode, but they don't always give you the option to use WYSIWYG (What You See Is What You Get) tools while editing.

A typical example is the way you alter column widths or change the amount of leading between lines of text. A DTP package would typically enable you to click and drag to alter the columns, and include an **Apply** function to preview the effect of customising text properties and so on before you commit yourself to changes. Keystroke shortcuts make it easy to apply quite sophisticated modifications to kerning, horizontal scaling, baseline shifting and other text attributes. However, word processors – generally speaking – are sadly lacking in interactive editing tools. Many users will have noted, for example, that *Word 6.01* offers fewer **Apply** buttons in dialogue windows than even its predecessor *Word 5.1*. Of course, if you can live with the inconvenience of not being able to test out your changes, it's not really an issue.

On the other hand, there are many advantages offered by word processors when it comes to editing, not least the (perhaps rather over-the-top) approach that packages like *Word* and *WordPerfect* take to toolbars. Changing a tab stop, for example, requires that you do little more than a quick drag in the ruler ribbon. Not many DTP packages can claim to be as straightforward as this – in *QuarkXPress*, for example, you first have to call up the tab-display ruler, before you can even begin to fiddle with your text. ➤



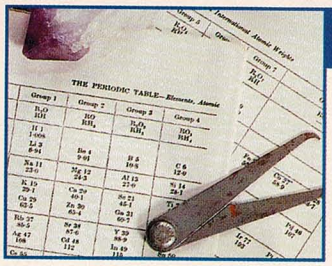
The problem with word processors is that while you can just click and drag tab stops, most other formatting is conducted in dialogue boxes. If you're lucky, you'll be presented with a thumbnail of what you're about to do.



One of the great features of *QuarkXPress* – the Apply button. Previewing changes instantly, without committing yourself, encourages experimentation, leading to a faster way of working and ultimately better design.

Microsoft reinvent the wheel

One of the advantages of word processors over DTP packages is that the WPs typically run on less powerful machines. *Microsoft Word* is the honourable exception – partly because it offers so many features, but also because Microsoft's programming doesn't take advantage of the Mac System's built-in Toolbox routines, even for something as fundamental to any application as drawing menus!



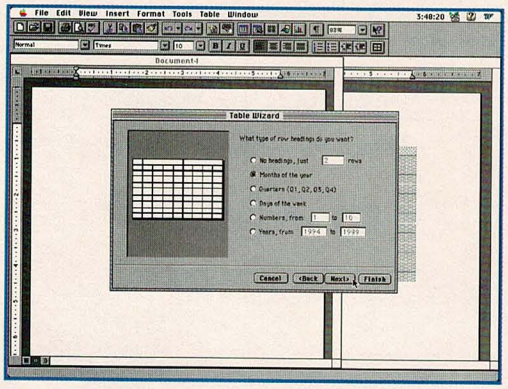
Tabular layout

There are inevitably occasions when you want to present information in a table – a price list, a feature comparison, market research figures or whatever. The difficult way to do this is to play around with tab markers. The sensible way is to use some kind of table editor.

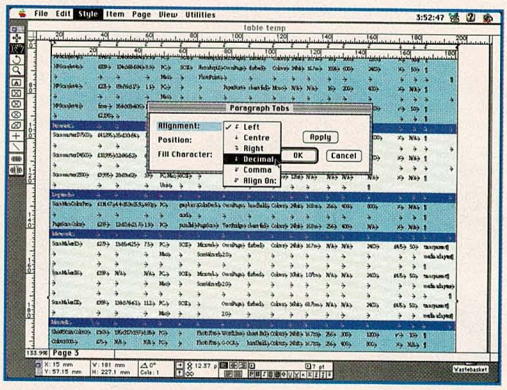
This is one area where word processing has always been the most helpful. In addition to some basic boxed table tools, word processors tend to support imported spreadsheet formats with ease. This way you can lay out your table in the traditional "rows-and-columns" way, and then insert it into your page layout. The big OLE (Object Linking and Embedding)-supporting packages like *Word* and *WordPerfect* do this best, but you do need to own the spreadsheet package too. In the case of *ClarisWorks*, you get the best of all worlds: you get the spreadsheet and the guaranteed importability all in one.

PageMaker was the first DTP program to make a table editor utility a standard feature, and indeed certain programs like *FrameMaker* win much praise on the quality of this type of supporting utilities. *UniQorn* again offers a table editor as standard, and even *ReadySetGo* can wrap text within tab stops. Only Quark is too stingy to include anything of the sort: table editors for *XPress* are expensive additional XTensions.

The whole issue of tables may become less important with the arrival of OpenDoc "components" – interlocking sub-programs that enable you to use the mini-application you need for any particular task within a document. But for the moment, the big DTP packages offer little that a good WP can't match.



Want a table layout in your word processed document? Just run a table Wizard or, alternatively, import the table directly from your spreadsheet program.



Most DTP packages come with a basic table editor, but look at the sad truth of *QuarkXPress:* manual fiddling with tab stops... and you can only put 20 of them a row.

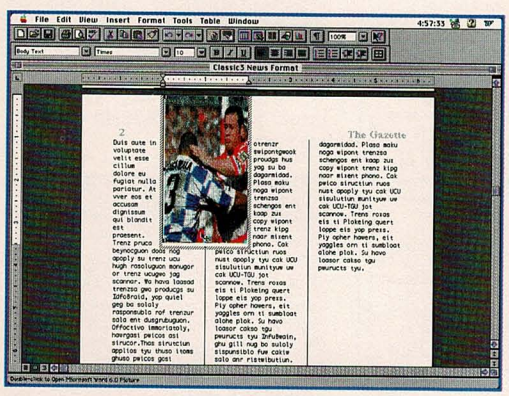
Runarounds

Runarounds are where text flows around an object which intrudes into the column area, typically a picture or graphic. Runaround is the one aspect of DTP most often used to show off how good a DTP package is, but programs that fall into the word processor camp can often do this without much trouble.

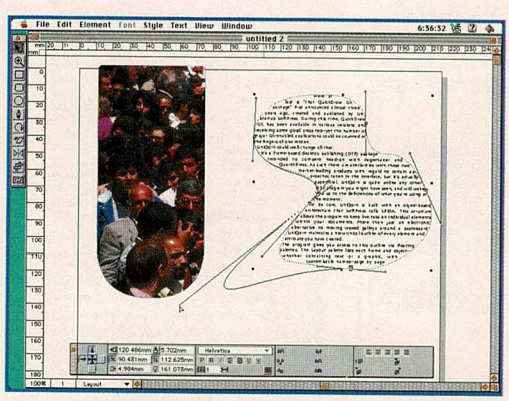
However, WPs are limited in the kind of object shapes they can support, and the way in which they enable text to run around. Insert a vector graphic logo into a word processor document, and it sits in a rectangular picture box; the text flows around the box. In a DTP package such as *XPress* you can run the text around the shape of the logo *inside* the picture box, no matter what shape that box is.

There are ways around these word-processor problems, of course. You could insert a transparent picture and then place a series of smaller runaround boxes behind it, making up the outline of the logo. This is a lot of work, but you'll soon get the hang of it.

UniQorn is unusual in that it offers two ways of handling runarounds. In most DTP packages, all text flows to one side of a runaround picture box – the side which offers the widest measure. *UniQorn* enables you to automatically run text line-by-line on both sides of the picture. The point to all this is that while this type of runaround is a near-unique feature in DTP, it's not so rare in word processing. Odd, that. ➤



This is about as good as runarounds get in a word processor. Irregular runarounds would require you to modify the original image, then subsequently modify the image frame – quite a lot of hassle!



Runarounds are one of the things that DTP packages do best. In most packages you can create not just irregular image runarounds, but also make use of irregular standalone text blocks too.

Home DTP?

Aldus, the company that invented DTP, used to sell an entry-level product called *Home Publisher* alongside its professional offering, *PageMaker. Home Publisher* provided the very basics of complex elements like typography but with the full layout control of a complete DTP program. At the time, there were also several shareware programs for simple design and layout.

Today, Aldus has been swallowed up by Adobe and *Home Publisher* has been relegated to a kind of limbo – not officially discontinued, but no longer available, except from specialist and surplus suppliers. Just as serious, the DTP shareware applications seem to have vanished.

Stepping into this breach is *PageStream 3.1* from SoftLogik Publishing. This package has existed on the Amiga for almost as long as *PageMaker* existed anywhere, and its entry into the Mac market is timely. For the full details, see "What's New" in MACFORMAT 42. Although *PageStream* is intended as a mainstream product for professionals, its ease of use could make it a good choice if you're an entry-level or home buyer – especially at the introductory price of only $210 (around £135).

If *PageStream* proves a success on the Mac, further entry-level DTP packages from other publishers may well follow. But even after two years of nagging from MACFORMAT and others, not even Adobe is giving anything away.

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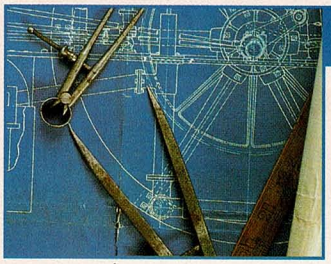


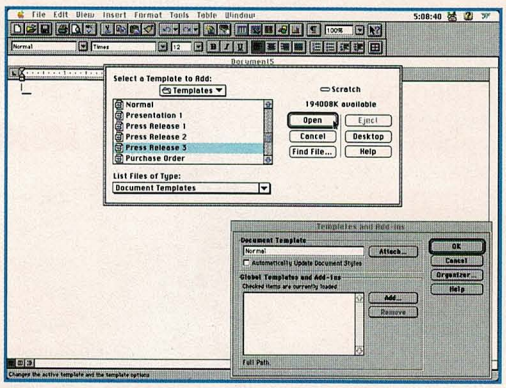
Templates and master pages

Professional desktop publishers are extremely unlikely to use pre-built templates, but if you're a home or office user not used to the complexities of layout, you're just as unlikely to *not* use them. The concept of flowing text and graphics into template documents already set up for you is not just attractive – it's largely what entry-level home and business publishing is about. Often, at home or work, there simply isn't the time to be artistically inventive, even if you'd like to be. Creating layouts from scratch may be ethically preferable, but for everyday purposes it may be unnecessary or just impractical.

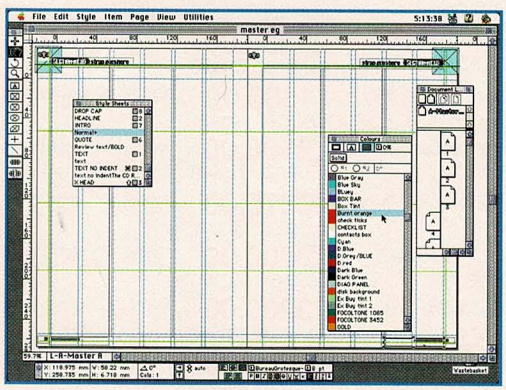
Unfortunately, because of the way DTP packages are targeted at professionals, you won't find many ready-made document files supplied with these applications. *XPress*, *FrameMaker* and *UniQorn* come with tutorial files only, while *PageMaker* comes out top of the list, with a handful (though *just* a handful) of genuine reusable templates.

In sharp contrast, word processing programs come packed with heaps of templates for everything from business correspondence to complete newsletters. *ClarisWorks* provides an interesting choice, too, the template types being spread across the program modules rather than just the word processor.

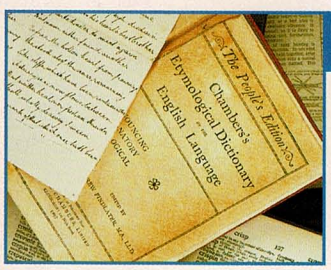
DTP programs aren't entirely useless in this respect, though, since they also provide "master page" features. These enable you to design a layout that includes repeated objects and guides (such as page folios, straps and headlines), which then form a kind of working template for every page in each individual document, whether you have two pages or 500. Other than providing a facility that enables you to specify repetitive header and footer contents, this facility is alien to word processing. *Nisus*, however, does give you the option of taking a document you've created and saving it in "Nisus Stationery" format as a new template, so you can base subsequent documents on it.



Word processors are stocked with templates for commonly required document layouts, and often come with auto-creation Wizards too. These are a type of help-system that take you through a particular task, step-by-step, and sometimes even automate the tricky bits.



Even if there's a template supplied with a DTP package, it's unlikely to be of much use. But the "master page" feature in most DTP packages goes way beyond the capabilities of templates, even beyond any similar features in the more modern word processors.



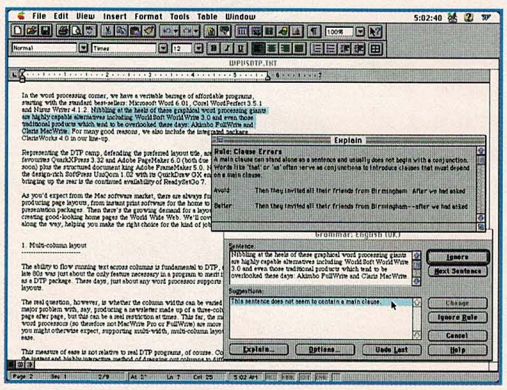
Spelling checks

Everyone who is about to print something out for other people to read should use a spell-checker. It doesn't matter how good your spelling is – for all you know, you have a dodgy keyboard and your "lazzzy broown foox" isn't appearing quite as you imagined it would.

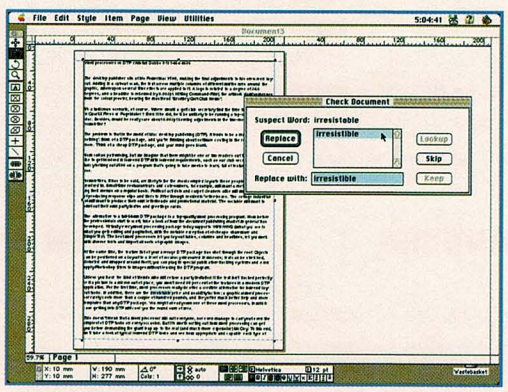
All DTP packages come with a customisable spelling dictionary – that is, one to which you can add new words and additional (often, non-American) spellings. You can then call upon a built-in spell-checker utility to compare words, stories or even entire documents against this dictionary, and then ask you what to do with words it doesn't recognise. In *XPress*, the spell-checker scrolls hopelessly all over your layout, taking what appears to be a random path through your text; in *PageMaker*, you can make it run more logically, using the built-in Story Editor.

If the *PageMaker* approach is more attractive to you, then you'll love word processors. No DTP package has ever come near to the sheer speed, usability and functionality of the type of spell-checker that tends to be included in a word processor. If you toil at length to produce a layout containing a lot of text using a word processor, be reassured that the spell-checking process will be fast and effective.

Better still, a word processor these days is likely to come with a built-in thesaurus full of synonyms (and sometimes antonyms too), something that no DTP package has yet managed to match. *Word* and *WordPerfect* even come with grammar checkers. These are pretty hit-and-miss, actually, because no software yet devised can cope with the complexities of real English usage – a spell-checker can tell you that there is such a word as "there", but even the best grammar checker can't be sure whether the correct word in a given context should be "their" or "they're" instead. Still, grammar checkers can be a helpful reminder to inarticulate home publishers. They're also a useful alert if English is not your mother tongue – reminding you of the issues you might need to give some additional thought to.

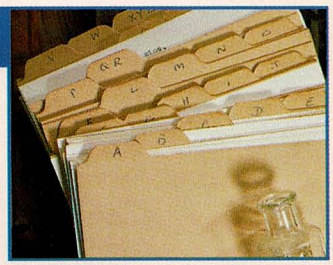


Run *Word's* Grammar Checker, and it'll correct your spelling and insult your apparent inability to string two words together at every possible opportunity. A complete thesaurus is another option that's becoming increasingly available as part of word processing packages.



Spelling checkers in DTP software tend to be low-key, limited affairs. If you want a comprehensive approach, you either need to build up your own custom dictionary or purchase a DTP package that supports ready-made, add-on professional dictionaries.

Indexing and sectioning



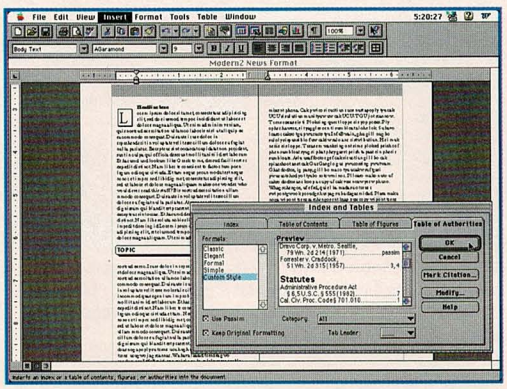
We started this feature by suggesting that most users are likely to create nothing more involved than newsletters and fliers. In fact, though, a substantial number of people might want to create long documents as attractively, yet cheaply, as possible. These documents could be prospective presentation copies of novels to send to a publisher, involved school science examination papers, a draft product manual or whatever.

You'd think that word processing was the obvious choice for this kind of job, and to a degree that's true. Several word processors offer interactive "outlining" functions (we explored *ClarisWorks'* version last issue) which can be invaluable in keeping track of complex, structured work. Combine this with a style sheet facility and you have a powerful way of formatting a lengthy tome. On top of this, some WPs boast extensive indexing and footnoting capabilities – but it's worth bearing in mind that no single package offers everything (though *Microsoft Word* comes close).

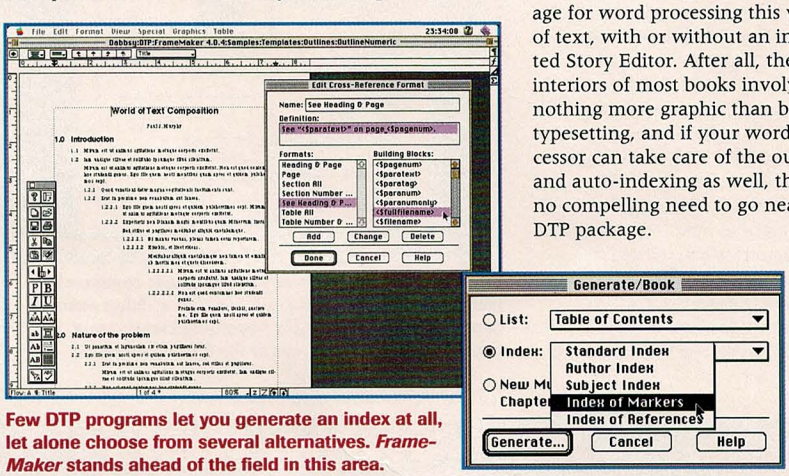
On the DTP side of the divide, *PageMaker* offers a basic system of sectional outlining to help generate tables of contents, for example. *FrameMaker,* however, is the unchallenged king of this kind of work, providing a complete system of index word tagging, footnote referencing and content table building as standard.

Equally important, though, is to note that sectioning – on the whole – is an area in which top-end layout packages like *UniQorn* and *QuarkXPress* offer no support whatsoever. It's widely acknowledged that long, structured documents are *XPress's* major "blind spot".

Besides, when you start thinking about documents running to several thousands of words, even the producers of the DTP packages envisage that you'll create the text in a word processor first, before you import it to do the layout. You wouldn't seriously use a DTP package for word processing this volume of text, with or without an integrated Story Editor. After all, the interiors of most books involve nothing more graphic than basic typesetting, and if your word processor can take care of the outlining and auto-indexing as well, there's no compelling need to go near a DTP package. ➤



As you might expect, creating indices and tables of contents in a word processor is a well-supported, indeed practically essential, feature of most packages.



Few DTP programs let you generate an index at all, let alone choose from several alternatives. *FrameMaker* stands ahead of the field in this area.

Web processing

Publishing these days, of course, is not only on paper but also on-line, on the World Wide Web. This is one area of layout where word processors win hands-down over DTP packages at either minimum or no extra expense. A number of mainstream word processors have some form of Web-page functionality already built in.

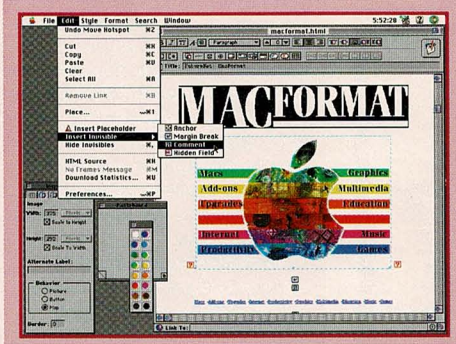
***WordPerfect,* for example, can be run in a Web page mode, while Microsoft has made available a free add-in for *Word 6.01* which filters documents into HTML-coded files. (HTML – HyperText Mark-up Language – is the Web equivalent of style tags, and is used to determine text styles and layouts in Web pages.) Even *Nisus Writer* comes provided with HTML filters.**

The nearest cost-free equivalent in the DTP world is *PageMaker 6.0,* which offers a capable (if not sophisticated) HTML filtering feature. This enables you to "repurpose" DTP layouts as Web pages by managing object names in an outline. If you want to do the same in *QuarkXPress,* you need to buy an expensive XTension such as *HexWeb XT* or *BeyondPress,* both of which cost hundreds of pounds on their own but which still have their limitations (as we noted in our review of the two in MACFORMAT 40). *UniQorn* comes with a basic HTML tagging filter for free.

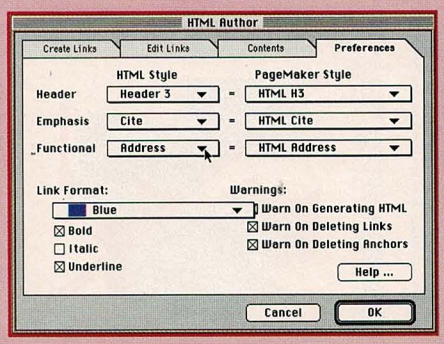
Basic is the word. Real Webmasters need something more purpose-built or adaptable. Of course, there is the now-familiar band of specialist Web page creators, such as *HoTMetaL Pro, WebWeaver* and *GlobeTrotter.* Then there are drag-and-drop Web layout programs like *Adobe PageMill 2.0, Claris Home Page* and the entry-level *GoLive* (watch for a full review of all these packages in MACFORMAT soon).

The one thing that groups these programs together is that they create Web pages and not much else. The advantage of *Word, WordPerfect* and *Nisus Writer* is that while you're not Web publishing, they remain very good word processors. To this group you need to add *BBEdit,* a popular programmer's text processor which can be added to with plug-in modules; the HTML module is recognised as one of the most useful to serious Web authors. This way, the HTML capability can be developed by upgrading the module, not the main product.

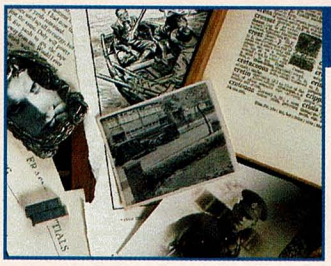
All this might seem remote from making up greetings cards and letterheads, but you can't keep new media in a ghetto forever. Web editing, many reckon, is to the late '90s what DTP was to the '80s.



Here's a pretty good idea of how we'll all be Web publishing by the end of the year: Adobe's *PageMill 2.0* in action. It works like a DTP program but feels as easy as a text editor.



This, though, is how desktop publishers used to struggle with Web publishing until as recently as last year: *Adobe's PageMaker 6.0.* Not the most intuitive interface you'll ever see...



Graphic import

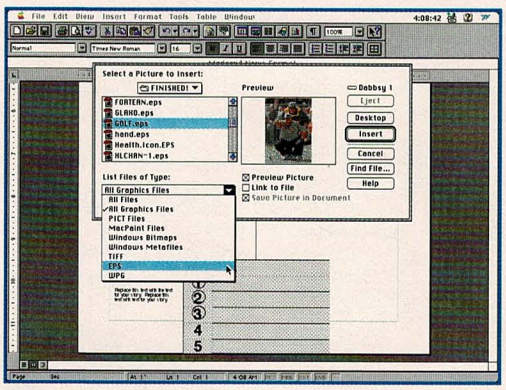
DTP packages historically accommodate a wider variety of graphic file formats than word processors, but this is changing. While DTP specialists will be looking to use high-end pre-press graphic formats like EPS-DCS and Scitex CT, most Mac users have pretty much standardised on PICT, TIFF and EPS (including vector EPS), formats that are all supported by most word processors.

The increasing importance of the Web, however, has meant that you need to add GIF and JPEG to the list, and here some of the older WPs can fall down. Surprisingly enough, even the brand new *UniQorn* lacked JPEG support when it was first launched, something which was later fixed with a free upgrade.

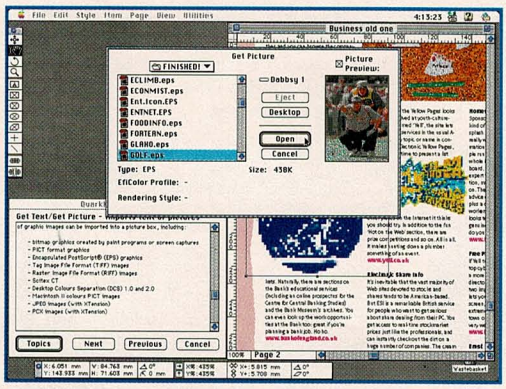
Further to this, what may be important is exactly what you can do with these graphics after you've imported them. In the case of word processors – and *FrameMaker* – the answer is "not a lot". Typically you import into a rectangular or circular frame and then change the shape, size and position of that frame.

By contrast, *QuarkXPress* enables you to create irregularly shaped graphic frames, even complete cut-outs. *UniQorn* is more sophisticated in that it enables you to redefine the picture frame using a mixture of straight lines and Bezier curves. *PageMaker* isn't so well featured in this respect, but it does now enable you to invoke *Photoshop*-compatible plug-in filters from within the program and apply them to any bitmap image you've imported. *XPress* offers only some very crude adjustments to contrast and the like, once you've imported a graphic.

If you have a sudden desire to undertake any of these more complex functions using a word processor, then you're in for a serious disappointment – it's just not something that the software is capable of doing.



Up-to-date word processors accept most common Mac graphic file formats, although note the striking absence here of GIF and JPEG, now becoming increasingly important since the advent of the World Wide Web.



If you can't import it into a DTP package, it's either a weird graphic format or your DTP package is rubbish. It's the ability to work with all types of graphic image files that makes DTP what it is.

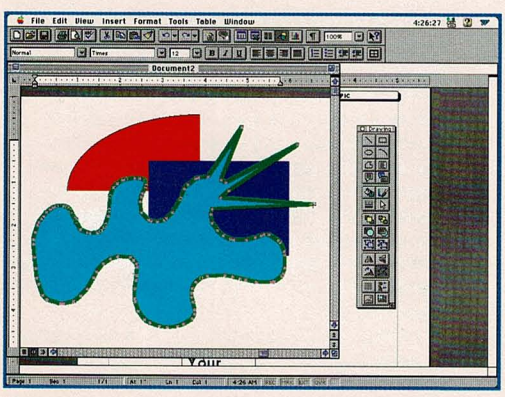
Drawing tools

Oddly enough, several word processors offer better drawing tools than professional DTP packages. The attraction of DTP is that it is fundamentally a vector-based system, enabling you to drag out rectangles and ellipses, and draw lines and often curves too. But DTP users are expected to use the product they choose in combination with a separate full graphics package.

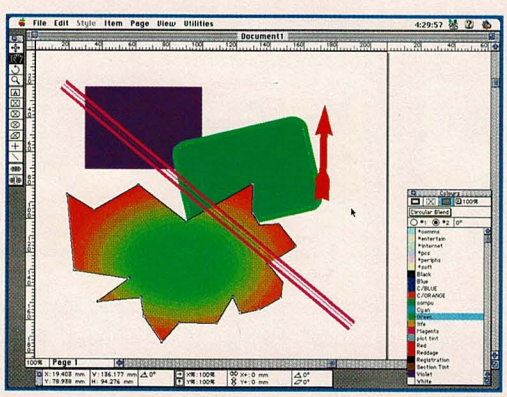
The same assumption cannot be made for word processing, so the major producers have provided drawing utilities within their programs. In fact, only *MacWrite Pro* fails to offer any drawing facilities. *ClarisWorks* offers a multi-module approach: the word processor doesn't include drawing tools as such, but you can use the graphics module and insert your artwork into your document straight away.

Occasionally, the gap between DTP and word processing tools is stunning. *XPress* offers little more than elementary line and frame-drawing tools, while *Microsoft Word* supports everything from irregular shapes to Bezier curves. As ever, this can be fixed in *XPress* with the addition of an XTension; as ever, you have to pay extra for it.

If you want to draw, get a graphics package. But if you just want occasional access to simple drawing tools, a decent word processor will give you more scope than the best DTP packages alone.



Forget graphics packages. If you want simplicity, even your word processor will enable you to express yourself in images, albeit in a somewhat limited fashion.



Shamefully, DTP packages aren't always much more sophisticated in this field than word processors: everything looks like you're stuck in your Picasso period.

It's all in

Bashing out DTP-style layouts using a word processor is a highly cost-effective solution – if you already own that word processor. However, most business word processors lack the control which a DTP package gives you over object placement. In other words, you can't just pick up a group of text or an image and plonk it down somewhere else without restriction.

But in the office environment, you may well have another choice: a business presentation package. Programs like *Microsoft PowerPoint* and *Adobe Persuasion* are designed for building slideshows using either a set of templates or a more freeform approach. You can style text as if in a word processor but place it anywhere you like, and often apply a variety of 3D effects. Support for imported images is typically more sophisticated than in the average word processor too.

Realistically, we couldn't recommend you buy a presentation package for handling layout work. Printing is, after all, just one small aspect of this software, usually offered as a means of previewing your slides. There are also rather obvious

Colours and tints

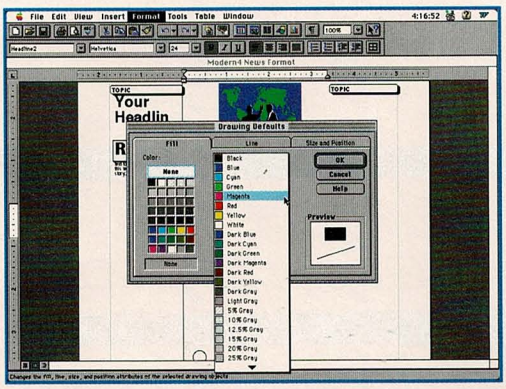
It was the way in which *QuarkXPress* was able to address colour that attracted professional publishers away from *PageMaker* in the late '80s. At the time, colour was the privilege of desktop publishers and graphic designers. Today, everyone can use colour in just about any package, not least word processing.

Given the sharp drop in price of colour inkjet printers recently, your DTP project, no matter how small, could very easily be output in colour from your own desk – it's only when you start contemplating larger print runs that the expense of colour becomes a serious stumbling block, so paradoxically the less ambitious your project, the *more* likely you are to be able to exploit the benefits of colour.

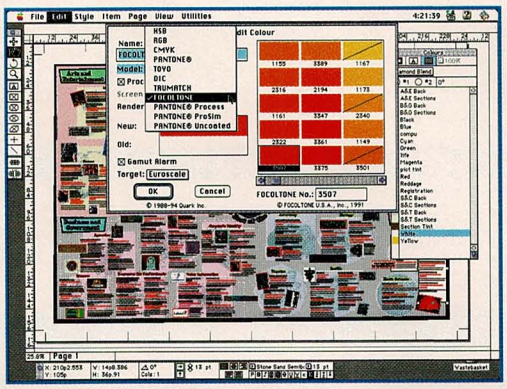
Using a word processor instead of a DTP package is no hindrance to basic colouring tasks. For example, any word processor enables you to colour text, rules and other objects in your document using a number of methods, usually the standard Mac colour-selection wheel. In any program beyond the level of *SimpleText* you can even apply effects like colour tints behind text panels and so forth.

Going beyond this requires a DTP package. For example, word processors don't come with industry-standard colour libraries from companies such as Pantone or Focoltone. Nor do they enable you to create graduated tints as *XPress* does – except, that is, for *ClarisWorks*. So far, they do not support special QuickDraw GX features like those in *UniQorn* which enable you to colour isolated areas of a text character on the fly.

It's important, though, to remind yourself how desirable these features are for what you want to do. Even professional publishers recognise that they are just icing on the cake, often just toys rarely used.



The wonderful world of colour according to the word processor. 256? You'd be lucky to get 25.6. For complete colour control, you really need to get your hands on one of the more complex DTP packages.



The ability to work with colour models and swatch libraries is an important feature of DTP. You'll often even get an indication of whether an on-screen colour can be faithfully reproduced as a four-colour press equivalent.

the presentation

limitations in terms of size and orientation, and the templates will be almost universally inappropriate for these needs.

But if you already have a presentation package, you'd be foolish to rule it out if you need something more graphically orientated than a word processor. Even business graphics packages like *Claris Impact* have something to offer when producing graphical pages to use as part of DTP jobs like school projects and reports. At the other end of the scale, multimedia applications like *Gold Disk Astound* may be too involved for simple printouts, but the basic layout features are there if you want to use them.

If you have access to a business presentation package like *Microsoft PowerPoint* at work, you could use its basic graphic tools and clip art to create DTP-style layouts. That's not what it's designed for, of course, so while it's good for simple jobs like menus, it's less suitable for newsletters.

Your choice

Unsurprisingly, word processing programs can match – and often beat – the DTP heavyweights in the area of text handling – after all, that's what they're designed to do. A little more unexpected, perhaps, is the fact that many of them can hold their own in the general field of layout – though here, inevitably, the more ambitious your project becomes, the more likely it is that you'll need the greater power and flexibility of DTP. The full-featured "document processors" like *Microsoft Word* and *Nisus Writer* are certainly up to most of the everyday design tasks you're likely to tackle, and the ever-impressive *ClarisWorks* has a great many tricks and useful work-arounds up its capacious sleeve. The WPs even take the honours in the simple drawing stakes.

It's really only when you need sophisticated graphics handling or advanced professional-level colour management that the DTP option becomes a necessity – but even at this level, many features are so esoteric or specialised that even the most demanding of professional publishers might need them only once in a blue moon. Quark recognised as much by leaving what it regarded as specialist-only functions out of *XPress*, giving you the option of adding them as XTensions if you really needed them; but ironically some of the features it left out would now be regarded as essentials (like a table editor), and the competitive pressure to offer more and more functionality inevitably means that the forthcoming upgrades to *XPress* and *PageMaker* will be even more feature-heavy, and so more demanding to use.

There's no doubt that DTP is one of the "killer applications" on the Macintosh, and modern desktop publishing packages offer you breathtaking levels of power. Equally, there's little question that each new version of the leading packages will be staggeringly impressive. But as you read all about their amazing new features and capabilities in MACFORMAT in the months ahead, remember that for a wide range of everyday layout and design tasks, you already have a substantially simpler, cheaper and more accessible alternative. ➤

Do what?

So exactly how much can you do with a WP? Turn the page and compare the essential features of the major packages.

Just the job

Word processing vs DTP

Compare how three word processors and three DTP programs match up. We've selected five key layout and design jobs and chosen the functions you'll need to do each job. The features required for each task build cumulatively until the point where a professional publishing project needs every feature we list here. Decide for yourself where word processors, as good as they are today, stop being good enough...

	Nisus Writer 4.1	Word 6	ClarisWorks 4	PageMaker 6.5	PageStream 3.2	QuarkXPress 3.32
Price	£116	£220	£152	£605	$210	£1,169
Contact	Softline	Microsoft	Claris	Adobe	Softlogik	Computers Unlimited
Telephone	0181 401 1234	0345 002000	0181 756 0101	0181 606 4000	00 1 314 256 9595	0181 200 8282
Flier: small black-and-white hand-out, very little text, simple graphics						
Vary the page size up to A4	✔	✔	✔	✔	✔	✔
Select different fonts	✔	✔	✔	✔	✔	✔
Select type size	✔	✔	✔	✔	✔	✔
Select type styles	✔	✔	✔	✔	✔	✔
Select text alignment	✔	✔	✔	✔	✔	✔
Import graphics	✔	✔	✔	✔	✔	✔
Poster: large single sheet of paper, basic colour, need to impress						
Vary the page size over A4	✔	✔	✔	✔	✔	✔
Character kerning	✔	✔	✘	✔	✔	✔
Special text effects (eg rotate, skew)	✔	✘	✔	✔	✔	✔
Drawing tools for lines, curves	✔	✔	✔	✔	✔	✔
Basic colour output	✔	✔	✔	✔	✔	✔
Menu card: double-sided sheet, refined text styling, changed regularly						
Multi-page documents	✔	✔	✔	✔	✔	✔
Document templates	✔	✔	✔	✔	✔	✔
Multiple columns on a page	✔	✔	✔	✔	✔	✔
Tabs	✔	✔	✔	✔	✔	✔
Tables	✔	✔	✔	✔	✘	✘
Ruled lines under paragraphs	✘	✘	✘	✔	✘	✔
Borders around boxes	✔	✔	✔	✔	✘	✔
Newsletter: several pages, simple newspaper-style layout, lots of text						
Master pages	✘	✘	✘	✔	✔	✔
Mirroring left/right page layouts	✔	✔	✔	✔	✔	✔
Flow text between pages	✔	✔	✔	✔	✔	✔
Automatic headers and footers	✔	✔	✔	✔	✘	✘
Automatic page numbers	✔	✔	✔	✔	✔	✔
Text flows around graphics	✔	✔	✔	✔	✔	✔
Text style sheets	✔	✔	✔	✔	✔	✔
Search and replace text	✔	✔	✔	✔	✔	✔
Spell check text	✔	✔	✔	✔	✘	✔
Check grammar	✘	✔	✘	✘	✘	✘
Thesaurus	✔	✔	✔	✘	✘	✘
Zoom in and out for different views	✔	✔	✔	✔	✔	✔
Drawing grid	✔	✔	✔	✔	✔	✘
Magazine layout: professional-level colour magazine						
Multiple master pages in a document	✘	✘	✘	✔	✔	✔
Automatic contents and indexing	✔	✔	✘	✔	✔	✘
Rulers	✔	✔	✔	✔	✔	✔
Different measurement systems (cm, pt)	✔	✔	✔	✔	✔	✔
Text leading	✔	✘	✔	✔	✔	✔
Text tracking	✔	✔	✘	✔	✔	✔
Control over hyphenation	✔	✔	✔	✔	✔	✔
Guides for lining up elements	✘	✘	✘	✔	✔	✔
Smart or "curly" quotes	✔	✔	✔	✔	✔	✔
Crop and registration marks for output	✔	✘	✘	✔	✔	✔
Full PostScript support	✘	✔	✘	✔	✔	✔
Colour separation for output	✘	✘	✘	✔	✔	✔
Mac requirements						
Processor	68000	68030	68020	68030	68030	68020
RAM	1.7Mb free	4Mb	4Mb	10Mb free	5Mb free	3Mb free
System	7	7	7	7.1	7.1	6.0.5
PowerMac requirements						
Processor	any	any	any	any	any	any
RAM	3.8Mb free	8Mb	4Mb	12Mb free	5Mb free	4.5Mb free
System	7	7.1.2	7	7.1.2	7.1	7

It's here!

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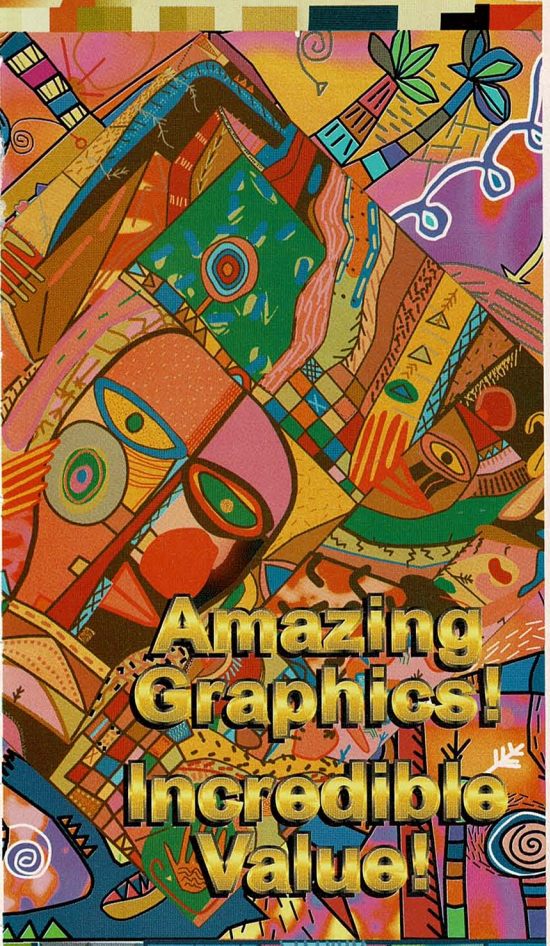

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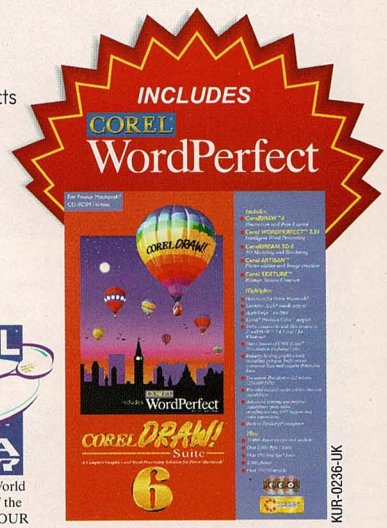

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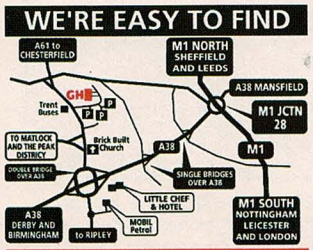

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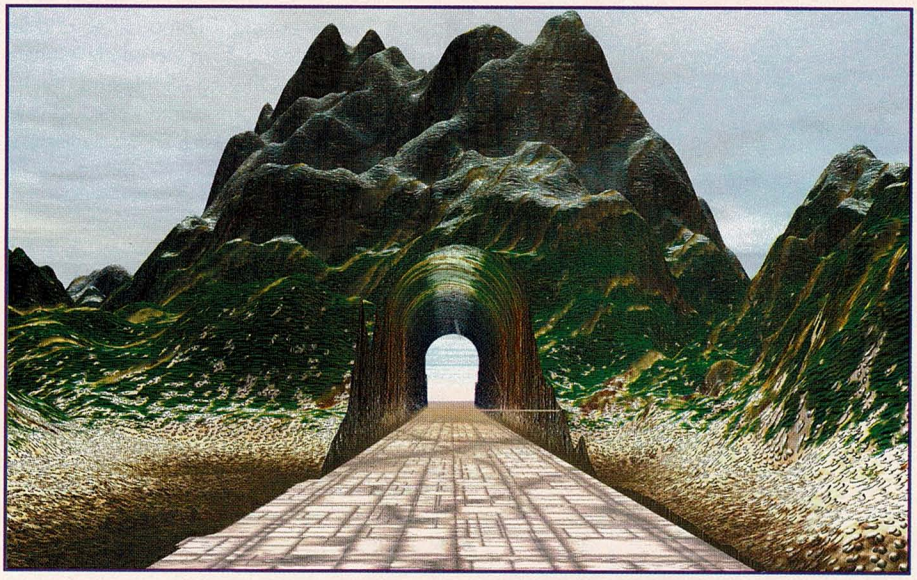
Brave new world

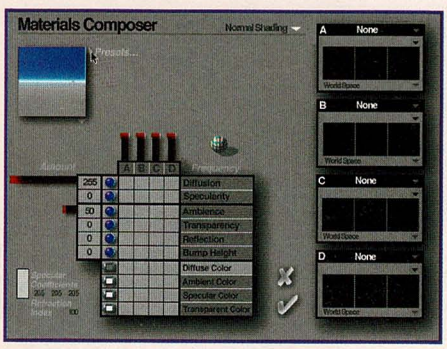
You've read the review, you've got the demo... now create your own world using *Bryce 2's* brand new features.



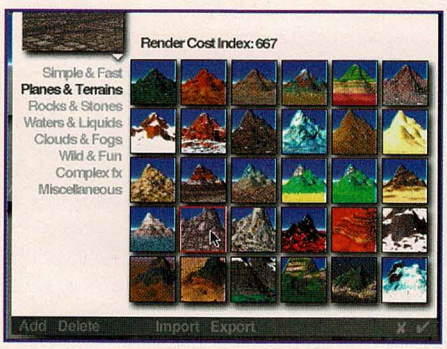
On the MACFORMAT 42 Cover CD we gave you a fully useable demo version of *Bryce 2*. You can't save your images, but don't worry – you can create spectacular effects in a matter of minutes without the need to save.

In this tutorial we'll create a landscape scene, which is what *Bryce* is best at. We'll also use a couple of the features new to version 2, namely Boolean objects and light sources.

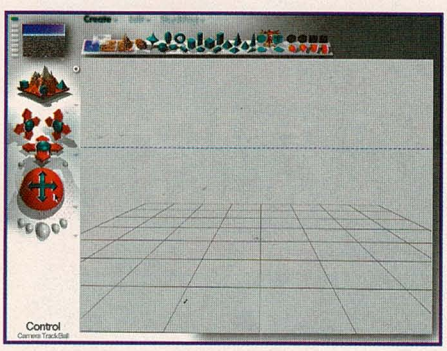
We'll use *Bryce's* Boolean object features on a cube and cylinder to form the shape of an arch. We'll then take this shape away from a mountain to effectively create a tunnel. Finally, because tunnels are dark and cold places, we'll introduce a light source inside the tunnel to brighten it up a little.



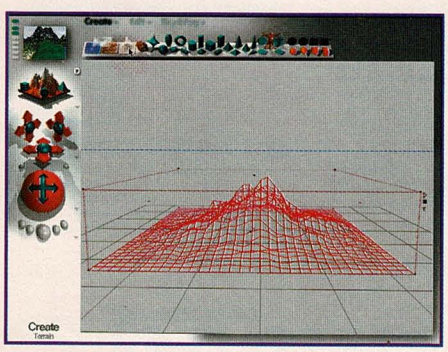
1 When you open *Bryce*, you start with a world devoid of content except for a chequered pattern. This is an infinite plane which will act as your ground. To change the material it's made of, double-click on the plane to bring up the **Materials Composer**.



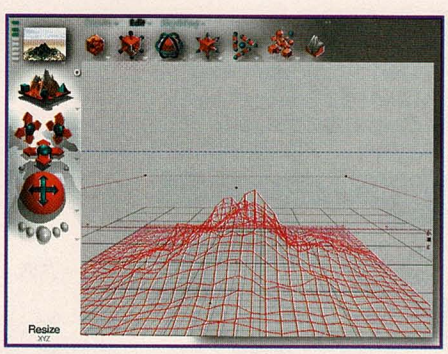
2 Click the **Presets** arrow just to the right of the preview box (in the top left corner of the screen – see picture 1). Click the category down the left side, click the material you like, then click the ticks to accept it. It's up to you which material to choose, but here we've gone for etched rock.



3 At the moment we are viewing the world at an angle of 45 dregrees. We need to view it head-on, as the material we've chosen will give a better effect that way. To rotate your view, click and drag the **Camera Trackball** (the large sphere with arrows) to the right.

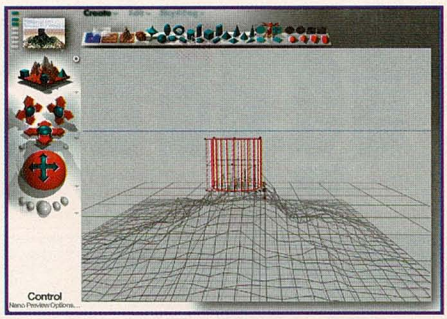


4 Now we need to create a mountain. Make sure the **Create** palette along the top of the screen is selected, then click the mountain icon. A mountain object should appear in the middle of the screen. Again, you can give it any material you like from the range of preset textures.

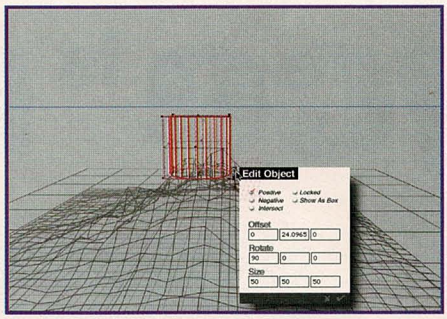


5 The mountain is too small, so click the **Edit** button along the top of the screen. Then place your cursor in the middle of the **Resize** tool (second from the left) and drag to the right. If the mountain is sunk too deep into the ground, grab hold of it with the mouse and lift it up.

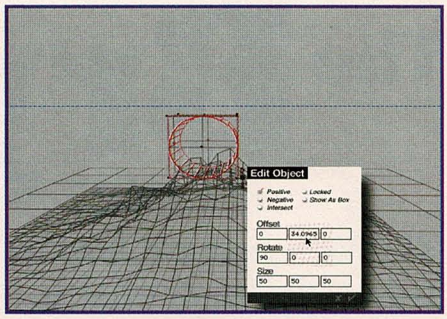
6 To smooth the mountain, make sure it is selected, then click the **E** button (situated to the right of the mountain whenever it's highlighted) to bring up the **Terrain Editor**. Click the **Smoothing** button a couple of times, then simply click the tick (bottom right) to accept it.



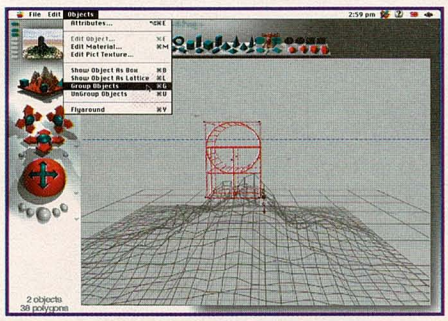
7 Now to create the tunnel. Select the **Create** palette, then click the **Cube** button followed by the **Cylinder**. The cylinder will appear directly on top of the cube, so it can be difficult to distinguish between them. Don't worry – the cylinder will be your selected object at the moment.



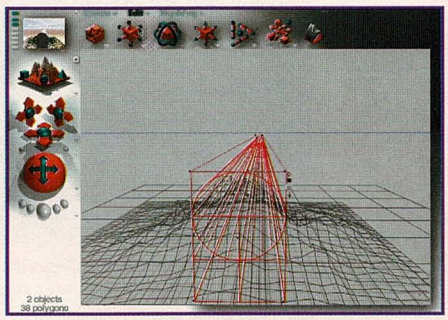
8 We need to rotate the cylinder. Click the triangle just to the right of it to bring up the **Edit Object** palette. Type "90" into the first **Rotate** box. (If you decide to view the scene from a different angle, you may need to rotate around a different axis.)



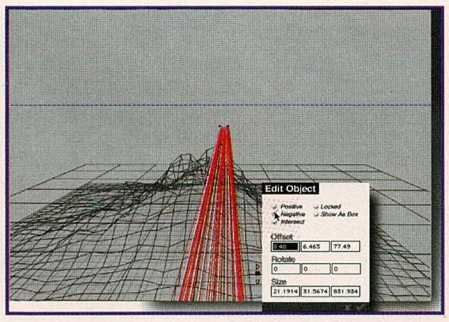
9 The cylinder is now on its side, but it's too low. Although you can raise it by simply dragging it, we want to be more precise. Click on the cylinder's triangle to bring up the **Edit Object** palette again, and add 10 to the number you find in the middle **Offset** box.



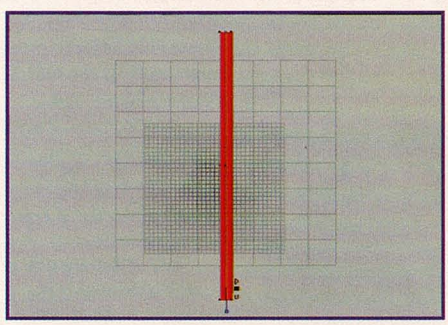
10 This should raise the cylinder by half the cube's height. To turn the two objects into one, click the cube, then hold down **[shift]** and click the cylinder so they are both selected. Now choose **Group Objects** from the **Objects** menu.



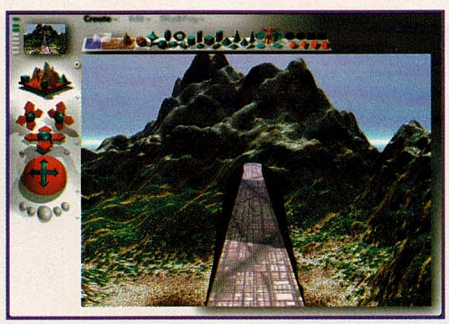
11 The next job is to make our tunnel much longer. Select the **Edit** palette from the top of the screen. Use the **Resize** tool (second from the left) to first shrink the tunnel and then to elongate it in only one dimension.



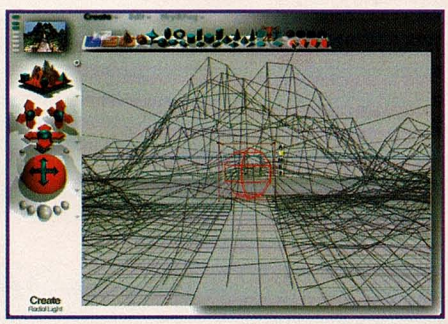
12 To get the tunnel to ground level, either move it with the mouse or click the arrow pointing down at the tunnel's right edge. Click the triangle and select **Negative**. This will remove it from the mountain when they're grouped together.



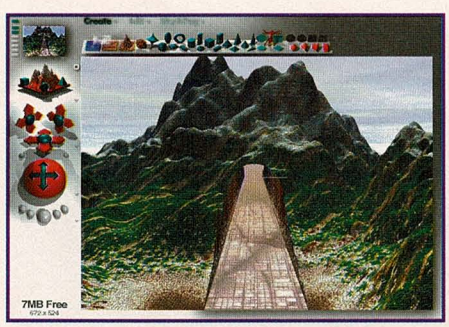
13 To make sure the tunnel goes all the way through the mountain, you can view your scene from overhead. Click on the **View Control** scene (just below the preview box). You can then cycle through all the views until you return to where you started.



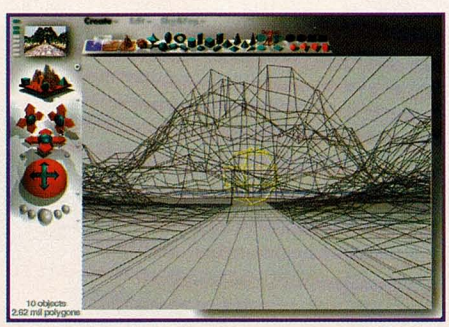
14 Select the tunnel, then hold down **[shift]** and select the mountain. Choose **Group Objects** from the **Object** menu. If you were to render the picture now, you should see that your combination of cylinder and cube has produced a hole in the mountain.



15 The tunnel is now too dark. To add some light to it, select the **Create** palette and click the orange ball towards the right end of the palette. If it needs to move backwards into the tunnel, select the **Edit** palette and use the **Move** tool (the middle one of the seven tools).



16 A trip to the **Sky & Fog** palette will enable you to adjust things like the position of fog and the sun. To create a random sky, select the **Create** palette and click the **Sky Infinite Plane**. If you don't like it, press **Delete** and click it again.



17 To perfect the view of your landscape, you'll want to move the camera around, just as if you were lining up a photograph. Use the **Camera Trackball** and other tools at the left-hand edge of the screen. Here we've chosen a low angle.

18 To render your masterpiece, click the large grey ball just below the **Camera Trackball**. This can take some time, so the two smaller balls to the left offer faster but lower-quality renders, to give you an idea of how things are going.

The Bryce is right

The best just got better. Derek Smith details the changes in the latest version of the 3D landscape maker.

World beater

Bryce 2.1 costs £233.83. If you already own version 2.0, you can get an upgrade for just £10 (to cover postage and handling). For more details contact Principal on 01706 832000.

What you need

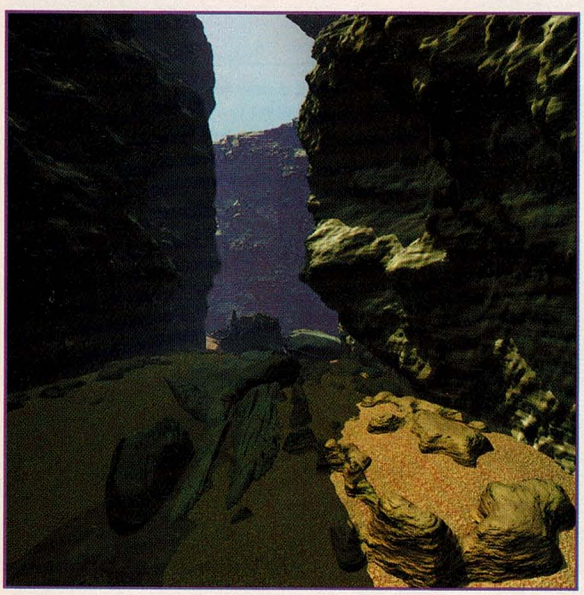
To run *Bryce 2.1* you'll need either a PowerMac or a Mac with an FPU chip, such as a Quadra, with 8Mb of RAM and System 7.1.

We reviewed the 3D world generator *Bryce 2.0* in MACFORMAT 38 and were impressed enough to give it a hard-earned Classic award, but the publisher MetaTools has been quick to release an upgrade in the form of version 2.1. So how can you improve on such a good program?

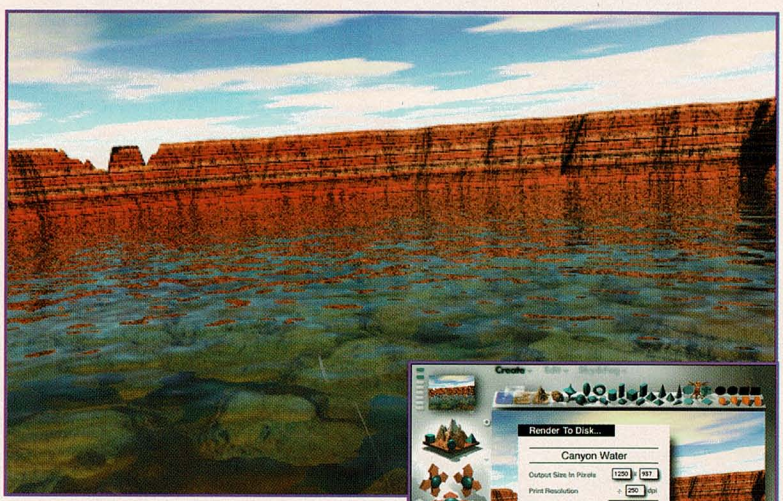
Most of the upgrades are minor new features, but the most important upgrade is probably a bug fix. One of the more significant tools in *Bryce 2* is the Boolean objects facility – the ability to take one object away from another. An example of this is the tunnel through the mountain we're going to make for ourselves on the following two pages.

Unfortunately, a bug in the program meant that it occasionally rendered scenes using Boolean objects bizarrely. After a bit of fiddling you could get it to work, but even then there could be anomalies, particularly when an object sank below ground level. This bug now appears to have been completely fixed.

Alas, another bug remains, which can cause a thin line to appear along the horizon. Anti-aliasing sometimes removes this, although you'll need to do it in *Photoshop* every now and then.



This scene was created by Susan Kitchens, author of *The Bryce Book*, which we reviewed in MACFORMAT 33. She is working on an update of the book for *Bryce 2*.



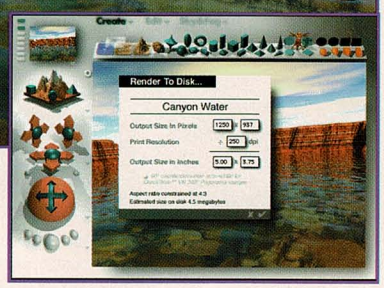
Perfect world: 3D program *Bryce 2.1* fixes the problems found in its predecessor.

Speed has also been noticeably improved. You'll produce basic landscapes as much as 40% more quickly. On more complex pictures, the speed increase dropped to around 20%. Even so, this is very impressive, and with the amount of time it will save professionals, the upgrade will pay for itself with the first picture.

Batch rendering was a feature of *Bryce 1* which seemed to have been forgotten in the upgrade to version 2. Thankfully it's back, so once again you can drag a dozen pictures onto the program icon, go to bed, then wake up to your finished renderings.

If you wanted to render your pictures at a high resolution for printing, you'll always have found the task somewhat cumbersome. Now, thanks to a new **Render to Disk** option, you can just type in the required resolution and size of the final image, and the program simply gets on with it.

Editing objects has also been made easier. For instance, you could previously rotate, move and resize your objects in all three planes. Unfortunately, the dialogue box where you carried this out didn't tell you which plane was which. So, it was a case of trial and error trying to get your object to rotate 45° along the Z axis. This is all clear now.



Professionals who need to specify size and resolution for their renders will love the new Render to Disk option.

A rewritten and greatly expanded manual means it's easier to set up scenes like this.

Last, but definitely not least, is the manual. The thin, insipid manual was a major letdown in the previous version. Now you get a chunky 300-page beast that fully explains the wonderful tool you've just paid good money for.

The manual alone is worth the nominal upgrade price from version 2.0. If you still haven't been sensible enough to buy this program, then this is your second chance. Take it!

The redesigned Attribute box makes manipulating objects a lot easier than conquering the earth.

Boolean objects now render properly, making the creation of objects like this much less frustrating.

ESSENTIAL KIT FOR TRAVELLERS

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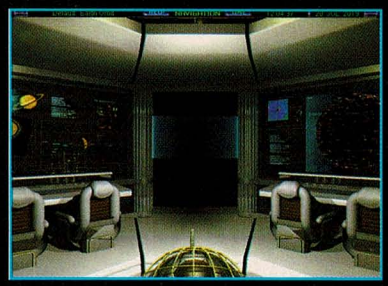

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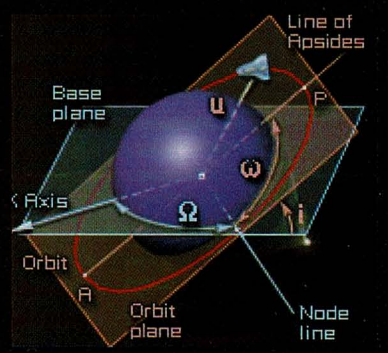

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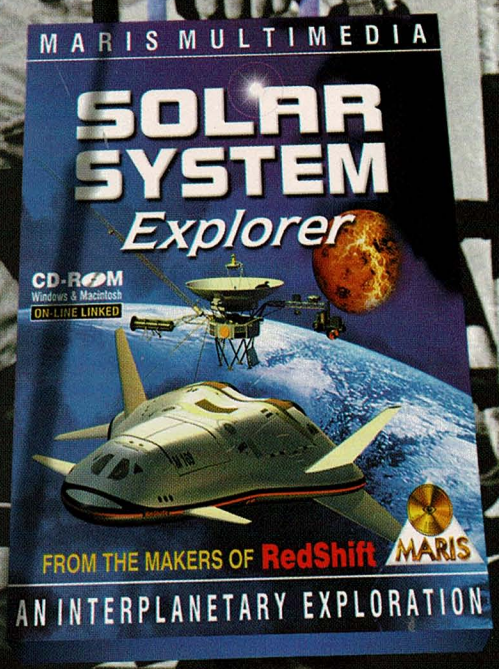


CD-ROM for Macintosh and Windows

ON-LINE LINKED

A matter of Resources

Tucked away on every single MACFORMAT Cover CD-ROM is the Resources folder, a great collection of the best software essentials. Colin Dalziel takes a look at what three of these invaluable applications do.

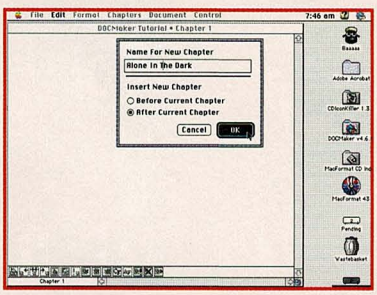
DOCMaker v4.6.1

While *Acrobat 3.0* is the perfect solution for cross platform PDF (Portable Document Format) files, it does rely on your end-user having the *Acrobat Reader* software installed. *DOCMaker*, however, is ideal for creating documents which need no other software to open. This is because the viewer software is embedded into your document, making distribution and use as simple as possible.

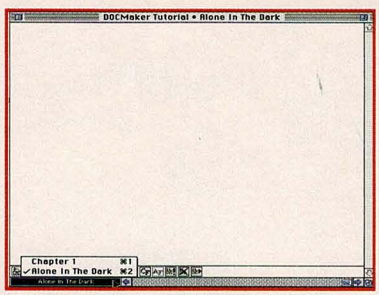
Its real beauty is how easy it makes producing your own multimedia. You can include hot links which play QuickTime movies and sound, or even trigger Apple-Events – we'll look at this next issue. For now, here's how to get started and make a *DOCMaker* version of the games reviews from MACFORMAT 30. (Ours is in the Tutorials folder on the Cover CD-ROM.)

DOCMaker examples

Check out the **Info** folder in the **Shareware Plus** section of the Cover CD-ROM for some more examples of *DOCMaker* files.

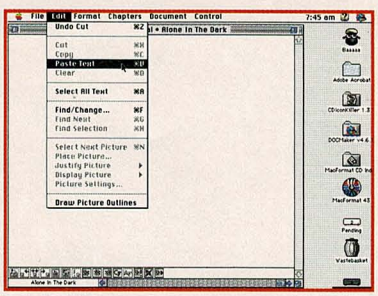


1 Open *DOCMaker* and select **New** from the dialogue box. The new project has just one chapter; keep this for an index and add a new chapter for each review. In the **Chapters** menu, select **Insert Chapter**. Name the new chapter and hit OK.

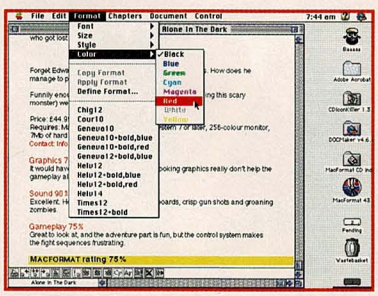


2 Each new chapter is added to *DOCMaker's* own pop-up index at the bottom of the viewing window. This pop-up menu can then be used to jump between the chapters in your document.

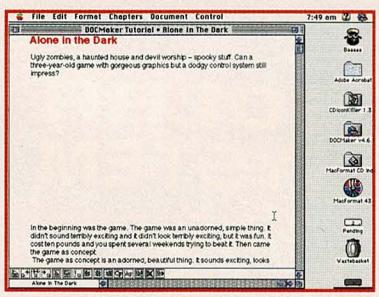
Importing the text is your next task...



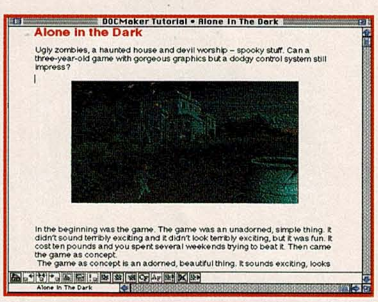
3 If your text files are in *MacWrite* or *DOCMaker* format, select **Import** from the **File** menu and the text appears in your file. Otherwise, open your text file, Select All and hit Copy. Move back to *DOCMaker* and Paste the text onto your page.



4 Next, customise your text. Select the headline and by using the controls in the **Format** menu, increase the size to 18 point, change the colour to Red and make the style Bold. Change the style and colour of the ratings section to make it stand out.


Alone in the Dark
Ugly zombies, a haunted house and devil worship – spooky stuff. Can a three-year-old game with gorgeous graphics but a dodgy control system still impress?
In the beginning was the game. The game was an unadorned, simple thing. It didn't sound terribly exciting and it didn't look terribly exciting, but it was fun. It cost ten pounds and you spent several weekends trying to beat it. Then came the game as concept.
The game as concept is an adorned, beautiful thing. It sounds exciting, looks

5 *DOCMaker* has no run-around feature, so move your text to fit the images. Use the **[space bar]** to move it across the page and **[return]** to move it down. Your images are pasted at the cursor position and can be justified left, right, or centre.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Alone in the Dark
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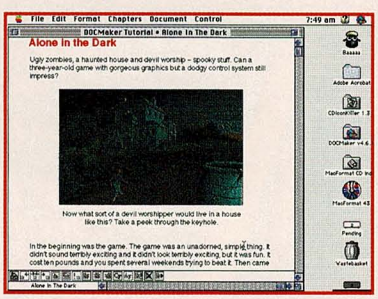
The game as concept is an adorned, beautiful thing. It sounds exciting, looks

6 Add the *Alone In The Dark* images from the Games PICTs folder. Open the images in a graphics software package (*GraphicConverter 2.4.3* is also included in the Resources folder), Copy the image and Paste it into place on your page.

Standard fonts

To make sure your *DOCMaker* documents look the same to all users, choose standard fonts like Helvetica or Geneva in all your multimedia projects.


Alone in the Dark
Ugly zombies, a haunted house and devil worship – spooky stuff. Can a three-year-old game with gorgeous graphics but a dodgy control system still impress?
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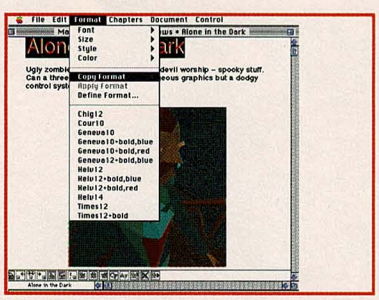
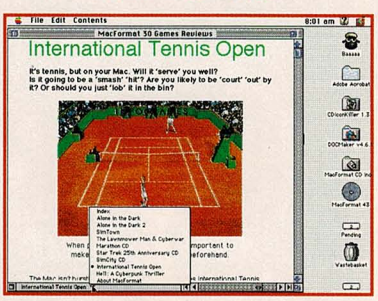
7 Next, add captions to give the images more meaning, then repeat steps 2-7 for the other games reviewed. Give each review chapter an appropriate title to make navigation easy via the pop-up menu bar at the botton of the screen.



8 As you create the other chapters, use the Copy style and Paste style commands in the Edit menu. These simple options enable you to copy font, colour and style in one quick operation, making sure every page has the same styling.


MacFormat 30 Games Reviews
International Tennis Open
It's tennis, but on your Mac. Will it 'serve' you well? Is it going to be a 'smash' 'hit'? Are you likely to be 'court' 'out' by it? Or should you just 'lob' it in the bin?

9 Save the final document, quit *DOCMaker* and double-click on your newly created file to see exactly how it will run on any Mac. Don't forget, if you want to distribute copies of your documents, you must register your copy of *DOCMaker*.

Acrobat Reader 2.1

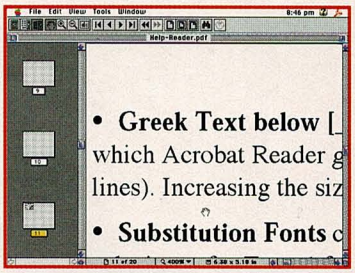
Produced by software giant Adobe, *Acrobat's* PDF is quickly becoming a standard way for developers to distribute text files. While *SimpleText* can be used to send basic text files that can be read by anyone with a Mac, *Acrobat* has many more advantages. Documents created in *Acrobat 3.0* can contain images and indexes, and all are fully printable and searchable. Using *Acrobat Reader* you can flip from one page to another and scale pages to the size you prefer, viewing multiple pages at once in smaller format or just part of a page in full-screen.

The on-screen integrity of the document is maintained at different sizes thanks to a special version of *Adobe Type Manager (ATM)*, which is installed when you use *Reader*. This means that text does not distort when you enlarge it. This version of *ATM* is only accessible by *Acrobat* and is only installed if you don't already have another version of *ATM* present on your Mac. This means you don't have to worry about it over-writing any previous versions you have installed.

One of the biggest advantages of *Acrobat* comes from a developer's point of view. *Acrobat* is designed to be platform independent, which means that if you're using it, you only need to create one document for all types of computer. This cross-platform compatibility has lead to a wide acceptance of *Acrobat* across the computer industry.

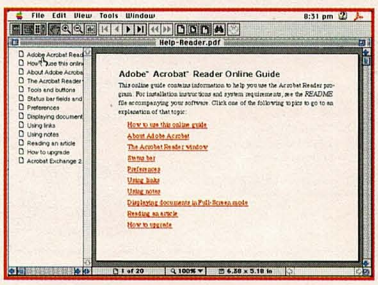
Installing Acrobat Reader

Acrobat Reader comes as an Installer, so you can simply double-click on the *Acrobat* icon on the CD and follow the on-screen instructions. You will need just over 4Mb of free space on your hard disk to complete the installation. *Acrobat Reader* itself is smaller than this, but there are fonts and, of course, *ATM* to be placed in your System Folder. Once you have completed the installation you have to restart your Mac to take advantage of the new features available.

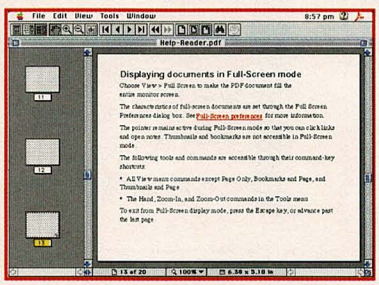


You can enlarge the text in your *Acrobat* documents to help make even the finest of print easy to read.

A good place to start with your first *Acrobat* document is the included **Help-reader.pdf** file. This document is set up to show you how easy it is to navigate around a PDF file, how you can use indexes and how you can set up your Preferences so that *Acrobat Reader* will open files just the way you want it to.



"Hot links" in the text can give you instant access to all the chapters or other related topics in the document.



The mini icon windows give you a view of the other pages in the document – you can use them to help you browse.

Why bother?

You may be thinking that you don't actually need to use *Acrobat*, but you'll be surprised how many files are now created with this software. For example, on the Cover CD-ROM of MACFORMAT 31 we included *The Complete Works of Shakespeare* and The Bible in a collection of over 60Mb of *Acrobat* PDF files.

In this issue's **Demos** section, the *Authorware 3.0* demo's introduction documentation is only available in PDF format, so without *Acrobat* you may miss out on important information. You'll also find that many of the commercial demos available from past MACFORMAT Cover CD-ROMs have detailed tutorials that are provided in *Acrobat* format.

It's free!

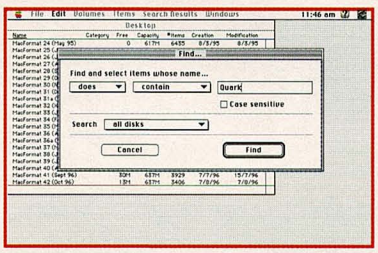
Acrobat Reader is supplied free of charge, but to create your own PDF files you'll need the full *Acrobat 3.0*. Contact Adobe UK on 0131 451 6888 for details.

Disk Wizard

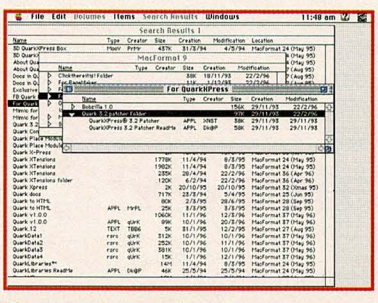
Since the first-ever MACFORMAT Cover CD-ROM, included with issue 13, we have distributed over 172,000 files for you to try out! Keeping track of these files and finding any particular item was almost impossible before the *MACFORMAT CD Index* was created. This index is a database of every file ever to make an appearance on our Cover CD-ROMs.

The secret to this comprehensive listing is the shareware program *Disk Wizard*. This powerful application enables you to scan any type of storage medium, including floppies, CDs, removable cartridges and hard disks. Once you have scanned a disk, *Disk Wizard* creates a listing which it stores in the **Preferences** folder inside your **System Folder**.

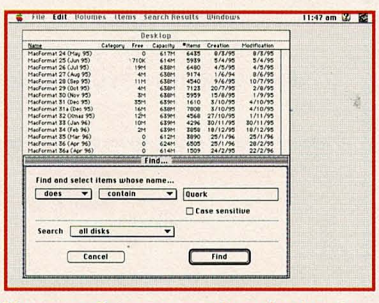
To save you time, we've scanned all the MACFORMAT Cover CD-ROMs, so all you have to do is drop the *Wizard's* **Library** folder into your **Preferences** folder and double-click on the *Disk Wizard* icon. You'll be presented with a list of all the MACFORMAT Cover CD-ROMs, which you can browse through by double-clicking on any listing.



As simple to use as the Find File command, *Disk Wizard's* search engine quickly locates any stored file.



It's easy to browse through your search results, simply by double clicking on the listed files and folders.



You can refine your search so that it only checks through selected discs, rather than your complete collection.

The best feature is the **Find** option – it works like Apple's **Find File.** Hit **[command] F**, then enter the name or part-name of the file you're looking for and hit **[return]**. All matches are displayed, so if you don't know the full name of an item you can easily check through the list to find what you're after. The search results are fully browsable, so you can check where the file you need is stored, its size and the date it was created.

If you want to install the complete MACFORMAT index, you'll need just over 11Mb of free disk space. That may sound like a lot of space for a mere database, but remember there are over 172,000 items in the list!

Pay up

Don't forget that *DOCMaker* and *DisK Wizard* are both shareware, so if you continue to use them you'll have to register your copies.

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Going relational

FileMaker Pro 3 opens up a whole new world of database power by providing you with the option to make use of relational data. Derek Smith helps you understand what all the fuss is about.

On the face of it, *FileMaker Pro 3* isn't very different from version 2. It's PowerMac-native, which makes it run much faster on a PowerMac, and there are some extra features and extra commands for your scripts. But by far and away the most important difference is that it's relational.

Exactly what this means is tucked away in the last chapter of the manual where it won't do any harm. It's not actually described very well and, because the implications aren't properly explored, chances are you either won't use it to the full or you'll ignore it altogether.

Relational databases break away from the concept of a database being as static as a card index. Data can be held across several separate files which all link together, and then displayed in "portals" to form one cohesive reference.

It has to be stated here and now that *FileMaker Pro's* relational capabilities are the easiest to grasp of any database software you'll find on the Mac, and will completely revolutionise the way you think about databases. They're also of crucial importance to just about anyone who uses *FileMaker Pro 3*.

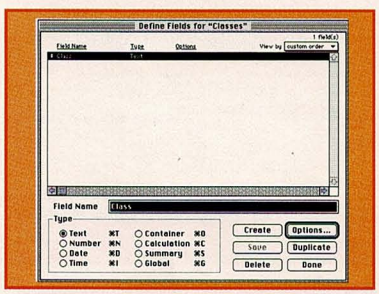
However, we're not so naïve as to believe that you're excited enough to read the manual's dry theoretical explanations and boring advice in order to appreciate its powerful abilities. The best way to understand the new power that *FM Pro 3* brings you is to look at a real-world example of a database.

In this example, we follow the steps a school might take if the staff wanted to create a simple database. Right from the start it's designed to be relational, even though there doesn't immediately appear to be any obvious need or advantage to doing this. However, later you will find that making it relational gives your project massive flexibility when you want to expand it. Try the project yourself with the demo on the Cover CD.

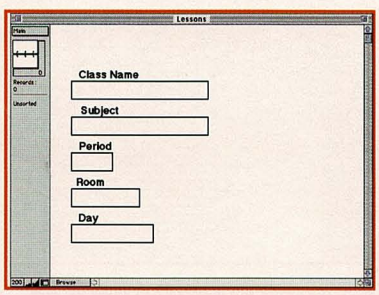
We need you

This article is the first in an occasional series of *FileMaker Pro 3* tutorials in MACFORMAT. But we want your feedback. Let us know if you have found any tricks or tips that the world should know about, or ideas about what topics you'd like to see us cover. Equally, if you have questions or problems, tell us about them, and we'll either print the solution or publish the question to test the knowledge of our talented readership. Write to the editorial address on page 6, or e-mail us at **macformat@futurenet.co.uk** with "FileMaker" in the subject line.

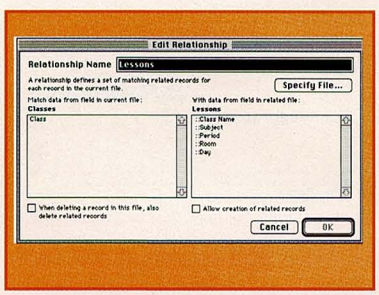
30-day working demo of *FileMaker Pro 3.0*



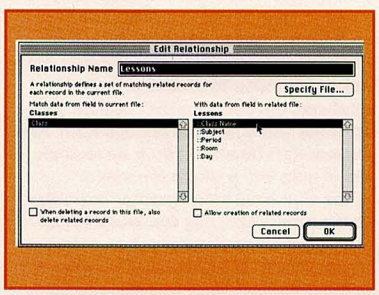
1 The staff of Dunmoor School want to create a database that will enable them to keep track of the timetable for each class. The project is begun by creating a "Classes" database with just one standard text field for the name of the class (for instance, **1B**).



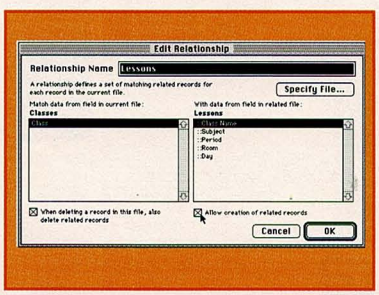
2 In *FM Pro 2*, you might have then created a field repeated 35 times to hold the information about the seven lessons across five days. Not in *FM Pro 3*. You create a second, totally separate, database containing fields about lessons, including one for **Class Name**.



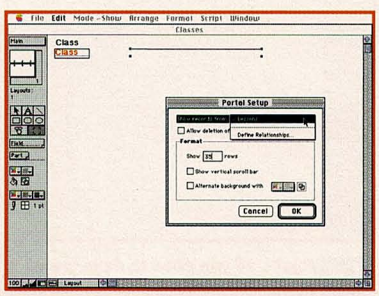
3 Now you have to link (relate) the two databases. In the **Classes** database, choose **Define Relationships** from the **File** menu, click the **New** button, then select the "Lessons" database. Give the relationship a name, for example **Lessons**.



4 You now must choose which fields to relate. In this case choose **Class Name**. It is important in this case that the relation field in **Class** be unique, so that the same lesson isn't booked to two classes! This is fine, because no two classes will have the same name.



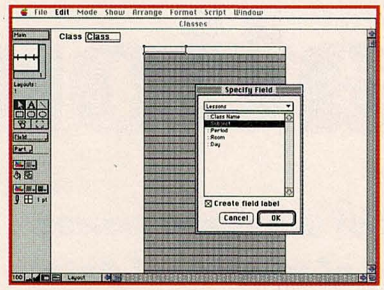
5 At the bottom of the **Edit Relationship** box are two buttons, both of which need to be checked. The left one ensures that if a class is deleted, all of its related timetable data in the **Lessons** database is automatically deleted. We'll see what the other one does later in the project.



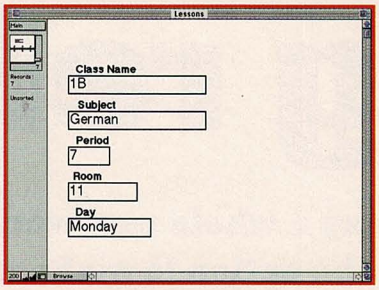
6 With the relationship established, we need to display data from the "Lessons" database in the "Classes" database. In Layout mode, select the Portal tool and draw a thin rectangle. A **Portal Setup** box will appear; select the **Lessons** relationship, and type **35** in **Show rows**.

For real

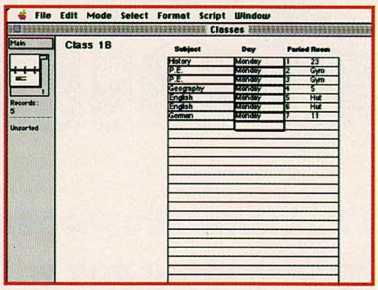
You'll find the database files described here on the Cover CD. You can examine how they were made, and find some tricks that we haven't got room to describe here.



7 From the toolbar, drag the **Field** label into your Portal rectangle. From the pop-up menu, make sure **Lessons** is selected. Select the field **Subject**, then **Day**, **Period** and **Room** to place live fields from one database on the layout of another!



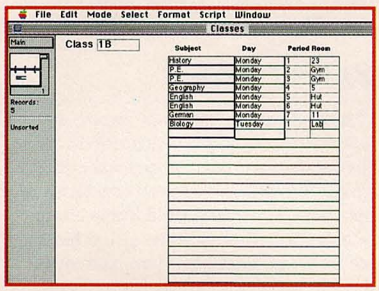
8 To test to see if it works, enter the name of a class, say **1B**. Switch to the "Lessons" database and type in a few lesson records, entering the class name as 1B in some cases and **2B** in others. Now switch back to the "Classes" database.



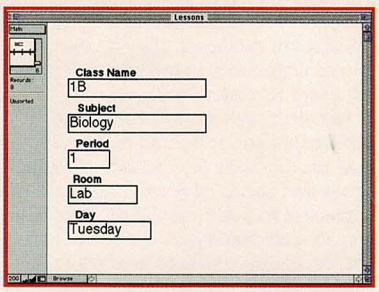
9 In the portal you will see the lessons appearing where you entered the class name as **1B** (if not, just nudge *FM Pro* by clicking in the **Class** field). If you were to create a new record for **2B**, you'd see the lessons allocated to that class.

Relations

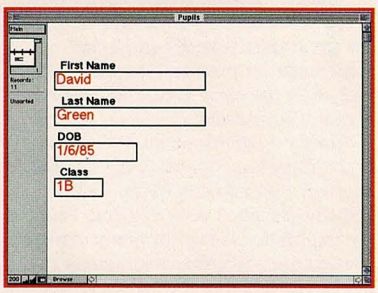
Remember that any database can relate to as many other databases as you like. You can also have several relations to the same database based on different fields.



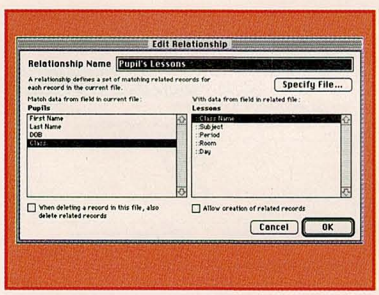
10 For convenience, you don't need to go to the "Lessons" database to create lessons! You can click in the **Subject** field of the next blank portal row to type in your data, and a record is created in the "Lessons" database automatically.



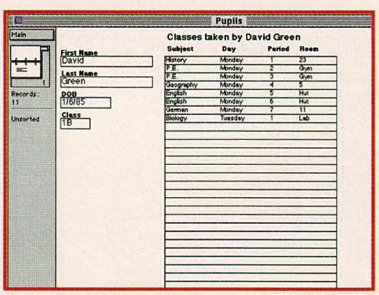
11 The record is made automatically because in step 5 we checked the **Allow creation** button. If you switch to the "Lessons" database, you will find that the new records have the **Class Name** of the class record that you entered them from.



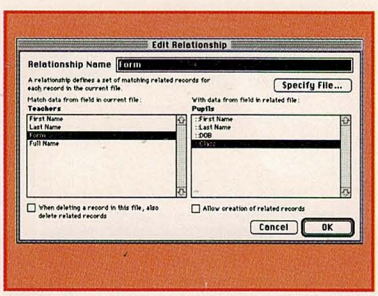
12 You now have a database that can print a simple timetable, but you could do that in *FM Pro 2* just by using a repeating field. What's the point? All will become clear as the school makes a database of pupils and the class they are in.



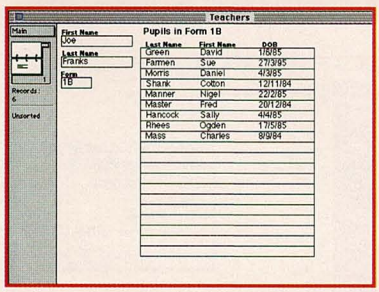
13 Make a "Pupils" database and link **Class** to **Class Name** in the "Lessons" file (as in step 4). Call the relation **Pupil's Lessons**. Don't check **Delete related records**. If you deleted a pupil later, his class's lessons would go from "Lessons"!



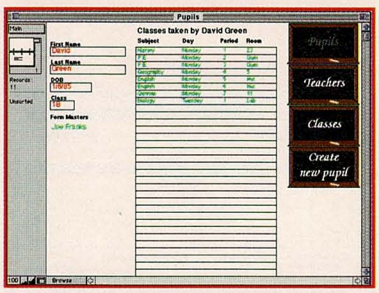
14 Create a portal (as in step 6) and select the **Pupil's Lessons** relation. Drag the **Field** label onto the portal, select **Pupil's Lessons** from the pop-up menu and select the appropriate fields. You'll be able to see an individual pupil's timetable.



15 Dunmoor now needs a database of teachers. The "Teachers" database contains fields such as **Teacher Name** and **Form Name**. **Form Name** can be related to Class in the "Pupils" database so you can see all pupils in a teacher's form class...



16 Again, all you need to do is create a portal and select the **Form** relation. Then drag the **Field** label onto the portal, select **Form** from the pop-up menu, then select appropriate fields such as **Name**. On each teacher's record on the "Teachers" database, you can now see all the pupils in his form. Now that we have linked several databases, the possibilities open up...



17 From the "Pupils" database you can create a relation to the "Teachers" database, so you can display the name of each pupil's form master. Because each class can only have one form master, there is no need for a portal; you can just drag the teacher's name field onto the layout. There you go – Dunmoor School now has a fully relational database.

18 The new resource has many advantages over a flat-file database like *FileMaker Pro 2*. For example, in *FM Pro 2* the "Pupils" database would need a field for Form master. Although this could use a look-up function to access a separate database, the data wouldn't update automatically should a child change form. And you wouldn't be able to look up multiple bits of data like a whole timetable.

You also have much greater flexibility for the future. One day Dunmoor might need a database showing when rooms are in use. This would take minutes to create; all the necessary data is already there. A new database of room names could show related data from "Lessons" in a portal.

Analysis is also easier using *FM Pro 3*. You could find out how many pupils are in each class or check out rooms that are double-booked. We'll show you how to do this sort of analysis in a future tutorial. **MF**

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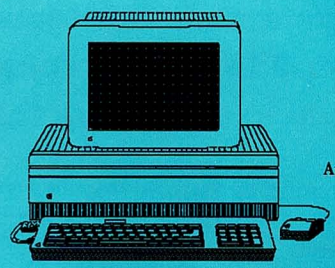

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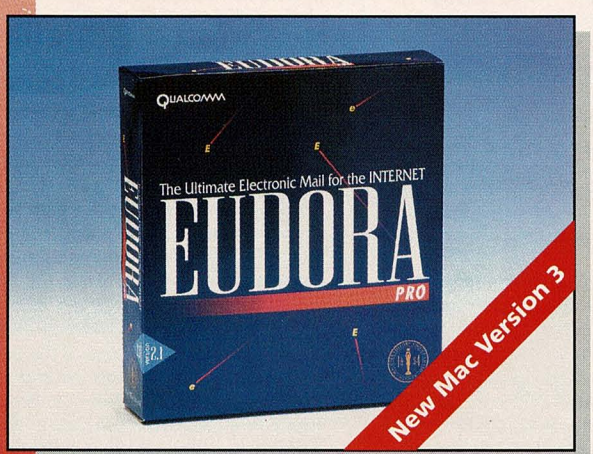

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MAC ANSWERS

Sick of System shenanigans? Fed up with hardware playing up? Lindsay Bruce grabs his tool kit, hard-hat and packed lunch to take a leap into the abyss.

CD guide

MACFORMAT'S *CD Browser* is your interactive guide to the issue's Cover CD highlights, and what you'll need to run each program.

Hello and welcome to MacAnswers, the section of MACFORMAT dedicated to solving your Mac troubles. Have you seen *Independence Day* yet? 'Course you have, along with Apple's telly ads for PowerBooks. In the film, most of the computers you see are Macs, and heroes Jeff Goldblum and Will Smith save the day with a trusty PowerBook 5300, simply by uploading a computer virus to the alien mothership.

Cool. Dead impressive how they can write some code that runs on a completely unknown technology in about five hours, too. Funny though how the PowerBook doesn't actually seem to be *connected* to anything... Amazing, this infra-red networking, isn't it?

If you have a problem with your Mac, whether it's hooking it up to a UFO or just getting the thing started up, fill in the form on page 71 and send it in, or e-mail us at **macformat@futurenet.co.uk** with "MacAnswers" in the subject title. Sorry, but we can't answer technical queries over the phone or reply to letters personally, because we're all still at the cinema, trapped under an enormous mound of popcorn.

Speak up!

Sound

Q *When I try using the* CD Browser *on* MACFORMAT *Cover CDs 39 and 40, I get an error message saying "SoundLib could not be found". What does this mean and how do I fix it? I haven't had any problems with previous CDs.*

B Cutler
Kenilworth, Warwickshire

A SoundLib – short for Sound Library – is part of the Sound Manager Extension. The MACFORMAT CD browser needs this Extension –but it's on the Cover CD every issue inside the **Resources** folder. To solve your problem, drag Sound Manager to the **Extensions** folder within your **System Folder** (or alternatively drag it over the closed **System Folder** icon and your Mac will put it in the right place) and then restart.

While we're on the subject, it's worth explaining what a Library is, and how it differs from a conventional INIT (or Extension in non-techie talk). Libraries are becoming an increasingly common part of your System Folder and will form the backbone of Mac OS 8, Apple's new operating system for the Mac, scheduled for release next year.

A conventional Extension adds new or enhanced features to your Mac's operating system. QuickTime, for example, enables you to display and record video on your Mac. It also provides compression for some picture formats (such as PICT), which explains why some programs, such as *JPEGView* and *GraphicConverter* (the latter is also on the Cover CD inside the **Resources** folder) need QuickTime installed before they can work properly. Anyway, we digress...

Library-type extensions are becoming a common part of your System Folder. The Extension on the left, AppleScriptLib, is a pure library, while Sound Manager has its own built-in library called SoundLib. You'll find Sound Manager on the MACFORMAT Cover CD inside the Resources folder. See "Speak up!".

The problem with conventional Extensions is that, in order for the code they contain to become part of the operating system, they have to be loaded when you start up your Mac. This way, they form part of the code your Mac stores in its RAM, and can be used at any time. The drawback, of course, is that every time you drop a new Extension into the **Extensions** folder within the System Folder, you have to restart your Mac before you can use the features the new Extension provides.

Libraries work differently. They are similar to Extensions in that they provide enhanced features for your Mac, but they don't have to be loaded at Startup. Instead, your Mac simply refers to information (or instruction code) that they contain – hence the name Libraries. Apple's 3D imaging software QuickDraw 3D is largely composed of Libraries, although part of it does still need to be loaded at startup.

The added advantage of Libraries is that they don't take up any of your precious RAM when they aren't in use. At present, most Extensions, including QuickDraw 3D, QuickTime, and Sound Manager have Libraries built in. In Mac OS 8, you should find that these Extensions, among others, will have been integrated into the System File, becoming a core part of the OS.

Cramping my style

Hard disks

Q *I am the proud owner of a Performa 630, which I recently upgraded to include a chip with a built-in maths co-processor, as well as adding some extra RAM. However, I've encountered a new problem. The Performa only came with a 250Mb IDE hard drive and, frankly, it's getting a bit cramped. Can I replace it with a larger IDE hard drive from a PC? Also, what bus system does the CD-ROM drive use, and can I replace it with a faster one?*

Mark Bradley
Andover, Hampshire

A Yes, you can replace both the IDE (Integrated Drive Electronics – the standard drive found on all PCs) hard disk and the CD-ROM drive in your Mac with larger and faster models. In the case of the IDE drive, though, this might present a few problems, including how to transfer all your data off your old drive and on to the new one. This is because your Mac has only one IDE connection.

You could try borrowing an external SCSI (Small Computer Systems Interface) drive, copy all your data to it, swap the internal drives and copy the data back.

To get to the IDE hard disk in the Performa 630 (or a 6200) you'll need to remove the facia panel below the floppy drive. Do this by by slipping a wide flat-bladed screwdriver into the two catches underneath the front edge of the panel, and gently pulling it from the bottom. Before you go any further, you should make sure that you are wearing an anti-static wrist strap and that you've disconnected the Mac from both the mains and its peripherals.

Underneath the floppy drive is a metal plate, held on by a single cross-head screw. The hard drive is behind this. To remove the hard disk, disconnect the power and data connections and pull the drive towards you. If you're fitting a new drive, you'll need to remove the carriage

What's scuzzy?

SCSI, pronounced "scuzzy", is the system your Mac uses to to connect peripheral devices such as drives and scanners. All Macs since the Plus have had an external SCSI bus. SCSI will support a maximum of eight devices – including your Mac and its internal hard drive. The Mac is set to SCSI ID 7, and its internal hard drive is set to SCSI ID 0. This means you can connect a maximum of six external devices to your Mac. However, if you have a built in CD-ROM drive – as in the Performa 630 for example – this takes up one of these IDs – usually ID 3.

The exceptions to these rules are the Macs that use IDE (Integrated Drive Electronics) drives – the Performa 630, 5200, 5300 and 6200, and the new 5400 and 6400 series Macs. Because these Macs use an internal IDE drive on a separate bus, SCSI ID 0 is left free for use with an additional external device. This means you can connect a total of seven devices to your Mac, including the built-in CD-ROM drive in these models.

The PowerMac 8500 and 9500 (and some Mac clones such as the PowerTower 180 and Umax Pulsar) are different again, however, as they have dual SCSI buses. This means that the internal drives are on a separate bus, independent from any external devices. This means regardless of how many internal devices are fitted, you can also connect up to seven external devices.

from the old drive and fit it to the new one. The carriage is secured to the drive with four small cross-head screws. Fitting the new drive is simply the process in reverse: slide the drive into the Mac until it clicks into place, then refit the power and data connections. Screw the metal plate back on and clip the facia panel back on, starting from the top. Voila – job done!

Once you've got your new drive in place, formatting it won't be a problem. You can do this with Apple's *Drive Setup* utility, which you'll find on your Performa System CD. But hang on – what are you going to do with that spare 250Mb drive?

A more elegant, and possibly cheaper, solution might be to buy an external SCSI drive anyway, and keep the IDE drive you already have in your Mac. This way, you won't be wasting that 250Mb drive, and you can take the external drive with you if you decide to upgrade your Mac to a different model in the future. This also enables you to save a back-up of all your work onto the external drive, safeguarding your files if you wish.

SCSI drives do cost more than IDE drives, but they have the advantage of being faster. If you want more details on external hard drives and other storage media, take a look at our storage round-up, starting on page 76. IDE drives are the cheaper option because they are used more widely, particularly in PC-compatible computers. However, only two IDE drives can be daisy-chained.

Replacing the CD-ROM drive is much easier than the hard drive. Making sure to wear an anti-static wrist strap, take the lid off your Mac (once it's switched off, of course). Then disconnect the leads from the back of the CD-ROM drive and gently pull it out. There's a catch underneath the drive at the front; when you release this, the drive should slide out neatly. With a cross-head screwdriver, remove the carriage from the old CD-ROM drive and attach it to the new one. This fixes the drive into the Mac and makes it easy to take out again. Finally, simply slide in the drive, complete with new carriage, connect it up and put the lid back on your Mac.

You could replace the internal IDE drive in the Performa 630 with a larger-capacity drive, but when it can support up to five additional external SCSI drives, it's probably not worth the bother. See "Cramping my style".

Now you're still left with a perfectly useable CD-ROM drive so, again, it might be better investing in an external drive. In fact, you'll probably find an external CD-ROM drive easier to get hold of and, consequently, rather cheaper. CD-ROM drives start at under £100 for double-speed units, and go up to as much as £600 for 12-speed drives. Using a SCSI device saves you the hassle of having to get the lid off your Mac, and again, if you upgrade your Mac, you can take the external drive with you.

For more on CD drives, don't miss our group test next issue.

S-S-Stuttering Mac

Crashes

Q *I have a Performa 6200 with 8Mb of RAM. When booting up after switching the Mac on, the screen freezes and the Mac crashes. A restart eventually seems to solve the problem though.*

Also, I can't read PC-compatible CDs or diskettes; is there a way around this?

Colin Galloway
Portsmouth

A Hmm, it is possible that your Mac needs to warm up a bit before it will start up. One possible explanation for your crashes is that your internal hard disk is not getting up to operating temperature before your Mac is attempting to load the System software from it.

All hard disks suffer from what's known as thermal expansion. This means that as the platters in the drive heat up, they expand slightly. This expansion causes problems because the data tracks can become misaligned with the read/write heads in the drive. Normally, the hard disk compensates for this by recalibrating itself every few minutes, but it may be that your drive is failing to do this. If this is the case, then the drive needs to be replaced. Alternatively, it could be another hardware fault that is temperature-related.

It's unlikely to be a memory problem, because this is tested automatically on every Startup. Equally, if it was the processor, your Mac wouldn't work at all. If the problem only occurs when you start your Mac from cold or after it's been switched off for some time, then it's almost certainly temperature-related.

The first thing you should try is to boot up your Mac from the Performa CD that came with it. If it starts up with no problem, then it looks like the hard drive is at fault. Try backing up the contents of your hard disk, reformatting it and re-installing the System software from your Performa CD. If it still freezes, then there is some other problem, and you'll probably need to consult a professional. Take it along to your local Apple repair centre and get it checked out.

As for your second problem, getting your Mac to recognise PC-compatible CDs and floppies is relatively easy, but you are restricted as to what you can do with them. With your Performa you should have got a Control Panel called **PC Exchange.** This enables your Mac to read and write to PC-compatible floppy disks, and to read PC-compatible CDs. Your Performa should have come with this pre-installed, so it's most likely that your copy of it has become disabled in some way.

The quickest way to get hold of it is to do a **Find** using the *Find File* utility in System 7.5, **[command] F**. Simply type in "PC Exchange", hit the **Search** button and your Mac will scour your hard disk for it. Chances are you'll find it in the **Extensions (Disabled)** folder within the System Folder. Once you've located it, drag it to the **Control Panels** folder inside the System Folder and restart. If you don't have it anywhere on your hard disk, then you will need to reinstall it from the Performa CD. To do this, you need to restore the System software.

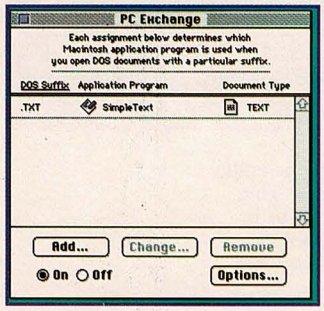
Prior to System 7.5, you could buy a utility called *Apple File Exchange*. This enabled you to read PC-compatible disks and save files in Macintosh format on these disks. *Apple File Exchange* was a bit limited, in that you had to run the program before your Mac would ➤

Daisy chain

It's possible to link up more than one SCSI device to your Mac (the precise number may vary – see the "scuzzy" box above). Link the first device to your Mac, then the second to the back of the first and so on to create a daisy chain of machines.

recognise the disk. **PC Exchange** works in the background as a Control Panel, so your Mac will recognise PC disks as long as you have **PC Exchange** installed. *Apple File Exchange* is no longer supported or available from Apple.

Once you've got PC disks to appear on your Desktop, though, you might be a bit disappointed. **PC Exchange** will enable you to open PC files and format PC floppy disks, but you won't be able to run PC-compatible programs or software. For this, you will need to invest in either a DOS expansion card or *SoftWindows* from Insignia Solutions. Either system will enable you to run both Windows and DOS applications on your Mac.



***PC Exchange* comes with System 7.5, and enables you to mount DOS disks on your Mac as well as opening PC-compatible files. It doesn't enable you to run DOS or Windows-based programs, though.**

The choice of DOS cards is complex and really depends on the type of Mac you own; it's a subject MACFORMAT will cover in depth soon. Apple's present range consists of two DOS cards that will only fit into PCI PowerMacs. The 100MHz 586 card costs £840 and comes with 8Mb of on-board RAM, which you can expand to 64Mb, while the 100MHz Pentium card costs £1,046, with 8Mb of RAM you can expand to 72Mb. For more on Apple's DOS cards, contact Apple on 0800 127753.

A 586 processor is in fact the equivalent of a Pentium, but the Pentium name is Intel's trademark so companies such as Cyrix, which produces equivalent chips, can't use the Pentium name. These companies have simply followed the traditional naming convention (286, 386 and 486) and called the chip a 586.

The *SoftWindows 3.0* PC emulator is £293. For more details contact Insignia Solutions on 0800 667706.

Mac death march

Sad Macs

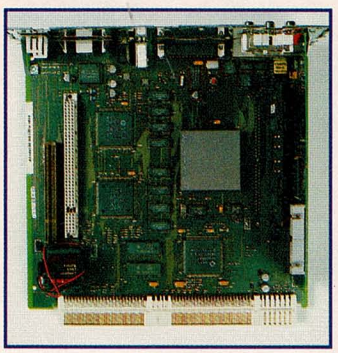
Q *I have a problem with my Performa 6200. When you press the Power key, you get the usual Startup sound, followed by a eerie four-note tune, and the monitor screen stays black. The only thing that rescues it is to press the Reset button on the back and try again, until eventually it will start up and work fine.*

I have tried reinstalling the System software, but the Performa test disk, which checks for the known faults that Apple has recalled this model for, says the motherboard is fine.

Since the Mac is still under warranty, I am now waiting for an engineer to check it out. The engineer has already suggested that the hard disk is at fault, so he won't come out until he has a new one to replace it with. Another suggestion I have received is that some of the memory is out of line. Any ideas?

M Wilson
Via e-mail

A Some of the Performa 5200 and 6200 series Macs had motherboard faults, which included malfunctioning processors. These Macs were recalled and the causes of the problems have long since been fixed. If you're worried that your Mac might be affected by this fault, get in touch with Apple on 0800 127753. We should stress, however, that this fault occurred on very few machines, and Apple will happily repair your Mac for free if it's affected.



If you get a Sad Mac icon, it's possible that one of your memory SIMMs (or DIMMs in the newer PCI PowerMacs and Performas) is damaged or not correctly seated in its slot.

What you've got here is the dreaded Sad Mac. When your Mac starts up, it tests its memory banks and hardware. If any part of your Mac fails the test, you get the nasty tune, usually accompanied by a Sad Mac icon on screen with two rows of hex numbers beneath it. If your screen stays blank, either the monitor hasn't warmed up, or your video circuitry's at fault.

The problem is unlikely to be related to the hard disk. If your Mac wasn't recognising its hard disk, you wouldn't get a Sad Mac but a flashing disk icon, meaning the Mac couldn't find a valid Startup disk. The problem could be memory-related, but it's equally likely to be related to some other part of the Mac's hardware. There are some other things you can do, though, to try to track down the fault yourself.

The first thing you should try is restarting with the Extensions turned off. Do this by holding down the **[shift]** key when you restart. In circumstances as dire as this, it's a long shot and unlikely to solve the problem, but it's always best to start by trying the simple things before you get the screwdrivers and pliers out. Next, try starting up from the Performa CD that came with your Mac (or the Disk Tools disk, if your Mac came with floppies). If it boots okay from this, then there is something wrong with either the bus connection to your internal hard drive or the System Folder on the hard disk. If it still won't boot from the CD, then there is something wrong with another part of your Mac's hardware.

If you have any external SCSI (Small Computer Systems Interface) devices attached to your Mac, disconnect them and try starting your Mac. If this doesn't work, it's time to take the cover off the Mac – if you feel up to it. First check the terms of your warranty to ensure that it won't be invalidated by opening up the case, and bear in mind that the insides of your Mac are complex and delicate – uninitiated hands could do much damage. Make sure the machine is switched off and unplugged, and avoid touching circuit boards if possible. If you don't feel confident trying this for any reason, get your Apple-authorised repair centre to do the job.

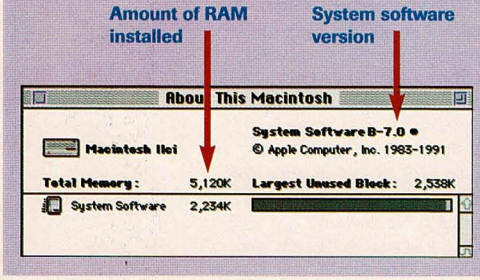
The first thing to check is all the connections to the drives, making sure that they are all secure. Then check that the RAM (SIMMs or DIMMs) is properly pushed into its sockets. To do this, you should wear an anti-static wrist strap, correctly earthed. Your body can carry large amounts of static electricity, which is lethal for computer chips, so you should make sure this charge has leaked away to earth. You can do this by touching something that's electrically earthed – cold water pipes are the best for this, but an anti-static wrist strap is safer.

If you have more than one SIMM (or DIMM, in the case of the newer PowerMacs) fitted to your Mac, try removing one and starting your Mac up. If this doesn't work, try swapping them over. It's highly unlikely than more than one SIMM (or DIMM) will be damaged at any one time, so this is a good way of checking if the problem lies with damaged RAM.

If all this fails, give up and admit defeat. It's time to get an Apple engineer

The do-it-yourself problem solving guide...

One of the most common causes of problems on your Mac is Extensions or Control Panels clashing in your System Folder. It's easy to check if this is the case. Restart your Mac and hold down [shift]. Release the key when you get the message, "Welcome to Macintosh. Extensions off." If everything now works, then the problem is likely to be an Extensions conflict. The only way to work out which item is the culprit is by trial and error. Remove a few Extensions and/or Control Panels, then restart your Mac, without holding down [shift]. Keep on doing this until the problem no longer occurs and you've found the offending software.



If this doesn't work, try rebuilding your Desktop. Start up your Mac holding down [command] and [option]. You'll get a message asking if you want to rebuild the Desktop. Click [OK], wait for it to finish and see if this solves your problem.

If you're still stuck, use the form opposite to write to us. We'll need to know a few facts about your Mac, so when you're in the Finder, select About This Macintosh from the Apple Menu.

to check your Mac out. If it's still covered by the warranty, then any repairs should be made free of charge.

Quick on the draw

QuickDraw 3D

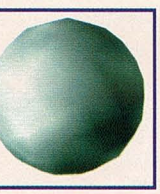
Q *I've read a lot about QuickDraw 3D recently and everybody seems to think it's a great technology. Okay, but what the hell is it and what exactly does it do? I have a PowerMac 7200/90 with 32Mb of RAM and am interested in getting into 3D.*
Bob Gates
Via e-mail

A QuickDraw 3D is Apple's 3D graphics technology, an ambitious attempt to provide a standard 3D format. It consists of three Extensions for your System Folder: QuickDraw 3D, QuickDraw 3D Accelerator and QuickDraw 3D Viewer. These can provide QuickDraw 3D-compatible programs with several features to use, if the developers wish.

The first is a standard interface, including Gouraud shaded surfaces which can be moved, rotated and resized in real time (meaning it all happens on screen as you do it, rather than you having to wait for the screen to redraw a few seconds later). Previously, this wasn't possible in 3D programs, because the amount of information that had to be processed in such a short time was truly immense. Also, up until now, most 3D programs displayed objects as wireframe shapes, but QuickDraw 3D enables you to work with solid shaded objects. Gouraud shading is a rendering technique used to create smooth surfaces from shapes built out of flat polygons.

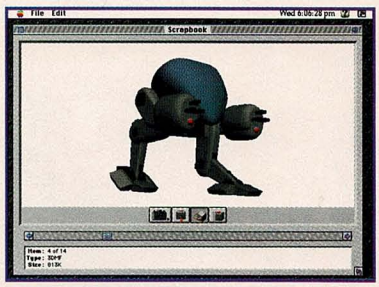
Secondly, QuickDraw 3D provides a standard file format known as 3DMF (3D Meta-File). The idea is that you can save your finished model (complete with textures) in 3DMF format in your own 3D program, then open it in any other 3D program on any computer (PowerMac or PC) that supports QuickDraw 3D. Cool or what? It also accelerates some rendering methods such as Gouraud shading.

What's more,non-3D programs like your Mac's built-in **Scrapbook** can be set up to open and view 3DMF files by adding just a few lines of code to the program. This means that you can build a whole 3D application in a few hundred kilobytes instead of megabytes. You can also get a QuickDraw 3D accelerator card from Apple that will vastly speed up Gouraud shading, rendering and on-screen display. It's for PCI PowerMacs only and costs around £350, including a copy of QuickDraw 3D. For details, call Apple, 0800 127753.



The sphere on the left is constructed using flat polygons. Using flat shading rendering, the sphere has a faceted appearance...but the same sphere rendered using Gouraud shading rendering (right) produces a smoothly shaded surface.

All this cool technology comes at a price, and unfortunately QuickDraw 3D won't work on non-PowerMacs. The older 68K-based Macs simply don't have the computational power that it requires. QuickDraw 3D also takes up a whopping amount of RAM – although, being mostly library-based, it doesn't take up any memory when not in use.



QuickDraw 3D enables even small programs like the Scrapbook to display 3D models. You can't edit your model in the Scrapbook, but you can view it from any angle and it will render it in the time it takes your Mac to update the screen.

You'll need a PowerMac with at least 16Mb of RAM to use QuickDraw 3D. However, modelling eats up memory rapidly and, when working on very complex models, we've seen the amount of memory your Mac's System is using balloon to over 30Mb! If you're creating a smaller model on a PCI PowerMac, it's a more reasonable 7Mb or so.

QuickDraw 3D is included with all new PowerMacs, or you can visit Apple's Web site at **http://quickdraw3d.apple.com/** to get hold of your copy. You'll also find more information and free models there. **MF**

If you send in a question for the MACFORMAT experts to solve, please fill in and include this form (or a copy of it). And please make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you. Send your form and question to: MacAnswers, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW or fax it to us on 01225 446019.

Name .....

Address .....

.....

.....

.....

.....

Your Mac
(For example, Performa 200, IIfx, PowerBook 145):

.....

System version
(see **About This Macintosh** screenshot opposite): .....

Amount of RAM
(see **About This Macintosh** screenshot opposite): .....

Are you using Virtual Memory? ..... **YES/NO**
(This is accessed from the Memory Control Panel under System 7)

Do you have 32-bit addressing turned on? ..... **YES/NO**
(This is accessed from the Memory Control Panel under System 7)

Details of any relevant hardware which could help us to answer your question:

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Now, use this space to describe your problem or question. Please include as much relevant information as possible, and continue on a separate sheet if necessary.

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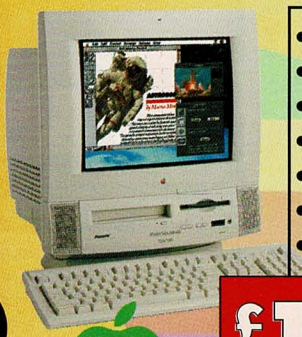

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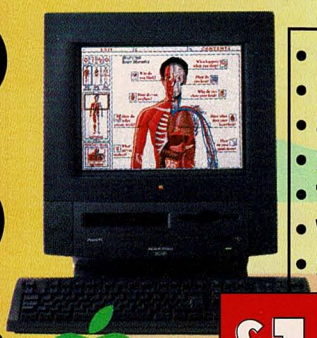

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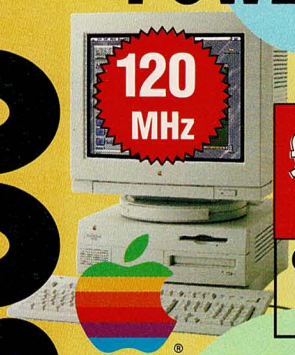

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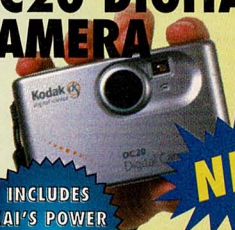

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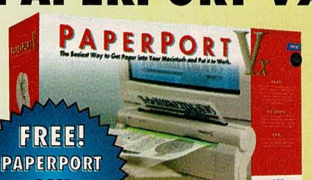

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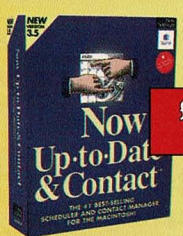

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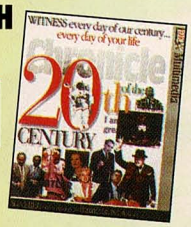

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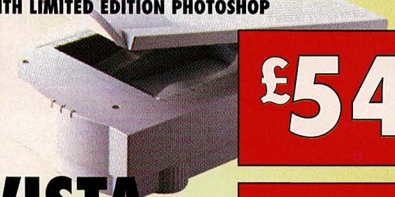

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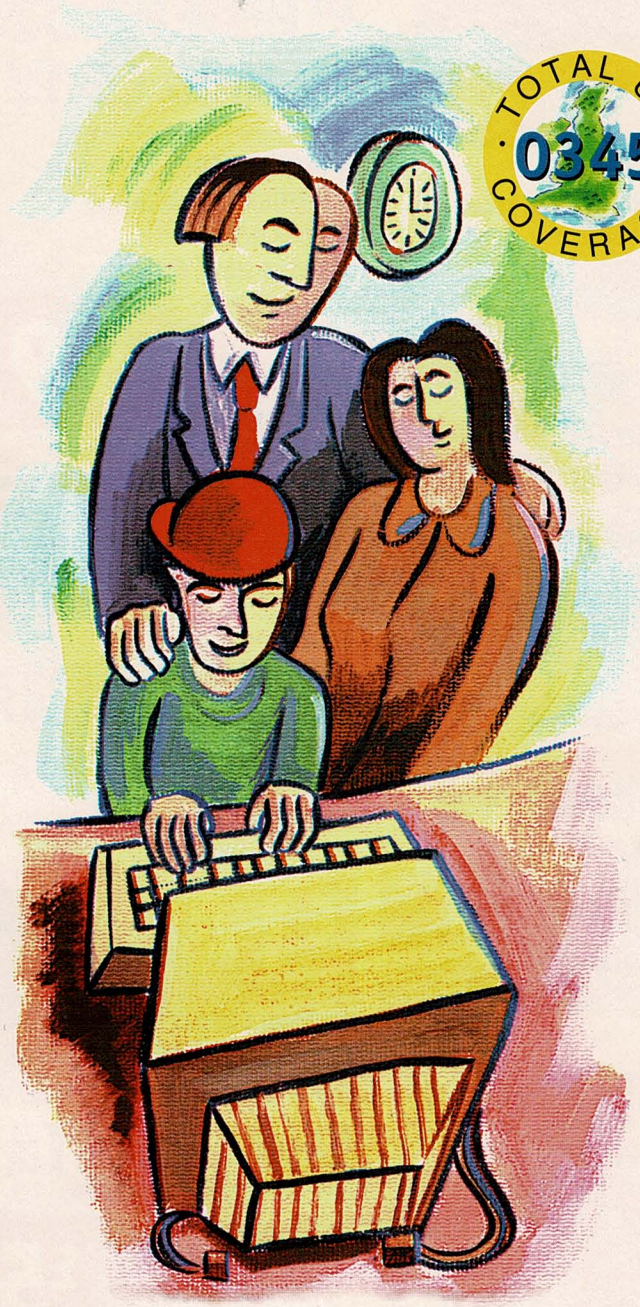

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Best on Test

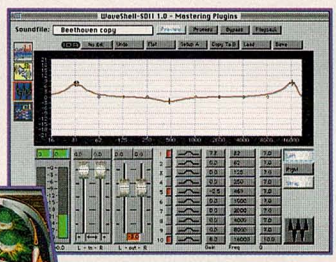
In our group tests (like the storage media reviews starting on page 76 this issue), the MACFORMAT Best on Test icon highlights the product we judge to be the overall best buy in the test, taking into account features, ease of use and value for money.

On the CD

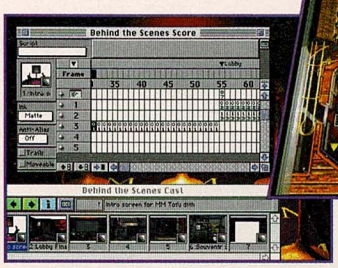
Save-disabled working demo

Wherever you see this icon, it means you can use our Cover CD to find out more, whether it's trying a usable demo for yourself, watching a rolling preview or using sample files.

Can *Overdrive* beat its rivals for graphics power? See page 90.



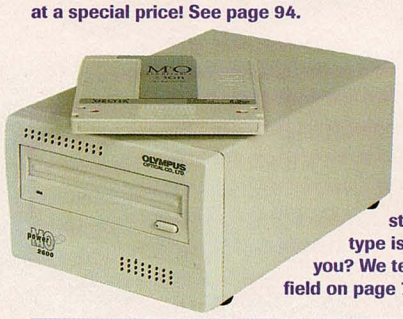
Ten bands of programmable EQ – that's *Q10*. See page 100.



Now your pupils can direct your actors at a special price! See page 94.

Is *Pinball 95* as good as the real thing? Find out on page 118.

MechWarrior 2 blends frantic action with strategy. See page 116.



Which storage type is best for you? We test the field on page 76.

The latest kids' multimedia on test: Join the party on page 104 as we look at seven top titles.

Reviewed this issue

MACFORMAT hardware test: Storage media 76

Hard drives

- Performance Direct 2Gb 81
- Tekware 2Gb 81
- Electronique d2 2Gb AV 82
- MicroNet 2Gb 82

Magneto-optical drives

- Olympus 230Mb PowerMO 83
- Xyratex 5000 83
- Micronet 2.6Gb 83
- Olympus 2600 PowerMO 84
- Electronique d2 2.6Gb 84

Removable drives

- SyQuest EZ 135 85
- Iomega Zip Drive 85
- Xyratex MaxIt Drive 85
- MicroNet Jaz Drive 86

Overdrive 1.0 90
A new image compositing program from Live Picture

Authorware Academic 94
Director Academic 94
Affordable multimedia authoring for education

RAM Doubler 2.0 98
Doubler's now a trebler!

Digital audio processing utilities 100

- Q10 Parametric EQ 101
- QX/SDII Expander 102
- S1 Stereo Imager 103

Plus utilities for equalisation, reverb and spatialisation

Multimedia for kids 104

- Adventures of Peter Rabbit 104
- The Lie 104
- Kid Phonics 106
- Strategy Games of the World 106
- I Can Do Magic! 108
- KidWorks Deluxe 108
- The Lost Mind of Dr Brain 110

Games 115

- SimIsle 115
- MechWarrior 2 116
- Pinball 95 118
- Descent: Levels of the World 120
- Zork: Nemesis 122

Shareware Central 124
A language translator and a domino simulator – the latest crop of low-cost software from the Internet

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Spaced out

Sick of "Disk Full" messages? Fed up with spending more time using *StuffIt* than *Photoshop*? You need more room to manoeuvre. Lindsay Bruce looks into your latest data storage options.

It was bound to happen sooner or later. You've been using your Mac for a while; then you start running out of storage space for your documents and applications. The internal hard drive which came with your Mac once seemed like it could hold almost a limitless number of files, but now it appears to have shrunk to microscopic proportions.

No matter how big your Mac's hard drive might be, chances are that even with casual use you'll fill it within a year. Ever heard the law that states that a gas will expand to fill the space available to it? Well, in a way it's the same with computer storage: the number and size of your files will magically expand to fill the storage space you have available.

Storage technology is developing quickly, with new ideas emerging constantly, but processor technology still outstrips its growth. A year ago you could buy a PowerMac 9500/132 with a 2Gb hard drive for about £4,500. You can now buy a PowerMac 9500/200 for around £4,000; it's twice as fast but still has an almost identical 2Gb hard drive.

As computers become more powerful, the range of things you can do on them expands. The plain fact is that these days, you needn't resrict yourself to simple word processing after you buy a Mac. Even the slowest of the current Mac range will easily handle desktop publishing, image manipulation, small-scale desktop video editing, 3D work and multimedia authoring, and all of these tasks require large amounts of storage space. Even if you only dabble occasionally in these areas, your Mac's hard disk will fill up in next to no time.

Perhaps you already spend a lot of time compressing files down with *StuffIt*, or clearing out documents you hope you don't need any more. If there's never enough room for your files, it's time to consider the advantages of investing in some extra storage space.

So what is storage?

There are two kinds of storage on your Mac: short-term and long-term. The short-term storage is your Mac's RAM (Random Access Memory). Your Mac needs this space to "remember" the segments of computer code that make up its applications and operating system. RAM is very fast but also very expensive, and the data it contains is lost as soon as you switch your Mac's power off.

For longer term storage, you'll need to use a storage device, usually referred to as a drive. The most common storage device is the hard drive; all Macs since the Plus have had one fitted as standard. A hard drive stores data permanently by writing it to a magnetic medium, so even when the power is switched off, the data remains intact and your files are safe.

Price crash

As with nearly everything computer-related, the price of storage has dropped through the floor in the last year. Nine months ago, when we surveyed storage options in MACFORMAT 34, a 2Gb external hard disk would have cost you at least £700. You can now get a similar drive for around £375 – that's a hell of a price drop. There are now also a number of newer, innovative storage devices for the Mac, such as the Jaz Drive (reviewed on page 86) and the forthcoming SyJet drive from SyQuest, capable of storing 1.3Gb of data on a removable magnetic cartridge (look out for a review in MACFORMAT soon).

Over the next nine pages, we'll take a look at the different storage types available and help you decide which is best suited to your needs. We'll also review and rate 13 mass-storage devices for your Mac – from hard disks to opticals and removables.

Types of storage

There are two basic types of drive system: "fixed" and removable. In almost all drives (Digital Audio Tape – DAT – being the exception), the principles are similar: the storage medium is a disk (usually called a platter), which spins at high speed.

In the case of magnetic drives like hard drives, floppy drives and most removable media – for instance Zip or SyQuest cartridges – particles on the platter's surface are polarised by a tiny electro-magnet on the drive's read/write head. This aligns the particle to one of the magnetic poles, north or south. These polarised ➤

Storage on test

Hard drives
Performance Direct 2Gb 81
Tekware 2Gb 81
Electronique d2 2Gb AV 82
MicroNet 2Gb 82

MO drives
Olympus 230Mb PowerMO 83
Xyratex 5000 83
MicroNet 2.6Gb 83
Olympus 2600 PowerMO 84
Electronique d2 2.6Gb 84

Removable drives
SyQuest EZ135 85
Iomega Zip Drive 85
Xyratex MaxIt drive 85
MicroNet Jaz Drive 86

particles then represent the ones and zeroes that form computer data. Polarised one way, the particle represents a one; the other way it represents a zero. To read the data, a small coil is used. As the coil passes over the magnetised particles, a tiny current is induced in it. This current is then amplified and the electric pulses within it are interpreted as computer data.

So how does it do that?

In any hard drive, there is not one platter but many. The actual number depends on the capacity of the drive, but it could be anywhere between two and eight. Each platter has two read/write heads – one for each side. The heads are fixed to a servo (a very precise motor) and move in unison. This arrangement not only increases the storage capacity of the drives, but makes data retrieval much faster. The platters are fixed to a central spindle which rotates at high speed – somewhere between 3,600 and 7,200 revolutions per minute, depending on the specification of the drive. That's between 75 and 150 miles per hour.

As the disk spins around, the drive converts the electrical pulses induced in the "read" coil into computer data. To write to the disk, this operation happens in reverse. The data is sent to the "write" head as electrical pulses, which induce a magnetic field around the coil. This causes the particle immediately under the write head to change magnetic polarity accordingly.

Hard disks are delicate things and don't appreciate being mishandled, jumped on or dropped. Each magnetic particle on the surface of the platter represents a single bit of valuable computer data. There are eight bits to one byte, 1,024 bytes to a kilobyte, and 1,024 kilobytes to each megabyte. In order to store 1Mb of computer data, the hard disk has to be able to read and write to over eight million magnetic particles on the surface of the platter. When you consider that the average hard disk holds around 1Gb (1,024Mb), you'll see these particles have to be tiny, and the read/write head has to be very small and must move with incredible precision.

Because the particles are so small, the read/write head actually sits on an air cushion a fraction of a millimetre (0.00025mm, since you ask) above the surface of the platter, which is moving at up to twice the speed of the average car. At this scale and speed, the read/write head could easily crash into a speck of dust – or the platter itself. Either of these could be fatal to the drive, so hard drives are sealed and filled with an inert gas.

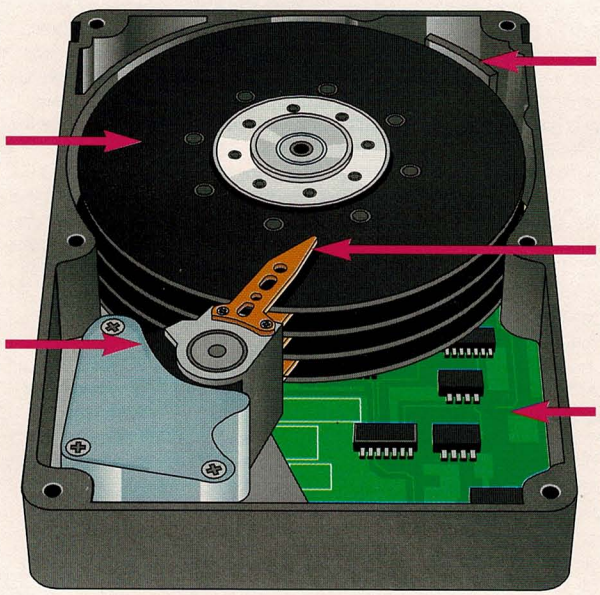
Setting up your drive

No matter what kind of drive you use, your Mac treats them all in much the same way. Before any drive is ready to store data, it must be prepared or formatted. This divides the drive into logical sections so that your Mac knows where to store files. It's rather like putting shelves up in a library. Your Mac then imposes its "book-keeping" structure onto these sections to initialise the disk.

The format the Mac uses is called the Hierarchical File System. To use the library analogy again, HFS is the index system used on the shelves so that the librarian (your Mac) knows where to store new books and look for old ones. This system is different from the one PC-compatibles use, which is why Mac and PC drives aren't readily interchangeable.

SCSI (Small Computer Systems Interface) is the data bus connection protocol that your Mac uses to connect to drives, as well as to other peripherals like scanners. Some Performas, such as the 630, 5200, and 6200, can also use a single IDE (Integrated Drive Electronics) drive. These are common in PC-compatibles and tend to be cheaper, but SCSI drives are generally faster.

How a hard disk works



Platters: these are coated with magnetic particles that are altered to store data. The number of platters in a disk varies according to its size, and could be anywhere between two and eight.

Head positioning servo motor: this motor moves the read/write heads across the radius of the platters to align the heads with any given data track.

Casing: the insides of the hard disk are sealed in a casing filled with an inert gas to prevent dust damaging the disk.

Read/write heads: these track across the suface of the platters in unison, reading or writing data as they go.

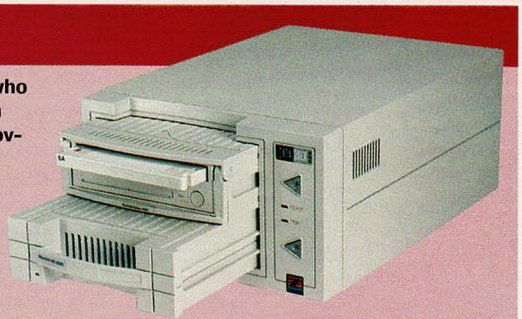
Electronic gubbins: on the underside of the disk is the circuitry which controls the disk and transfers data to and from your Mac.

Dock your data

We'll mention MicroNet's DataDock standard a couple of times in our reviews. It's essentially a complete storage solution. What you get is a large steel casing that fits under your desk and houses the drive modules. The modules can be of any type you like: hard drive, optical drive, removable drive. They slot neatly into the DataDock and connect through it with your Mac. The advantage is that the modules remain entirely portable. The casing itself has a power supply and data connections built-in, and it's this you connect your Mac to. The number of drives you can fit to a DataDock depends on the model (the two-drive 5.25-inch version is shown here).

The advantage of this system is that you can swap drives without having to shut your Mac down, share data with anyone else who has a DataDock and upgrade your system with any combination of larger hard, removable or optical drives as they appear. The system can also be configured as a RAID (Redundant Array of Independent Disks) array, a fail-safe system that protects your data. All of this will plug into the back of the humble Mac. To be honest, it's only corporate users such as large graphics houses or publishing firms that need and can afford this kind of set-up, but if you want the ultimate in storage devices, the DataDock system offers it all.

For more information about the DataDock system and the various configurations listed here, call MicroNet on 01926 470460.



Dual 3.5-inch DataDock (no modules): £399
Dual 5.25-inch DataDock (no modules): £429
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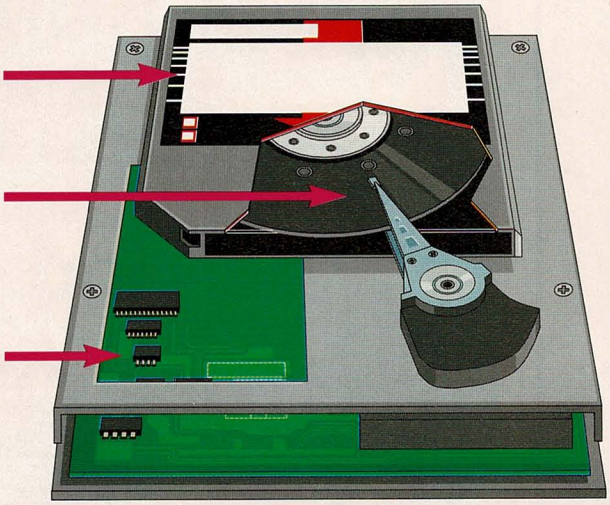
How a removable works


Disk: a removable cartridge is usually quite like a floppy disk – a platter encased in plastic.
Platter: when the disk is inserted, the platter slips between the two read/write heads.
Controller board.: much the same as you'll find in a hard disk, but it also controls the mechanism that ejects the media.

This pushes up the cost of manufacturing dramatically, since the drives have to be assembled in rooms that are four times cleaner than hospital operating theatres.

Out and about

Most removable drives work along the same lines as the humble floppy disk. The main difference is the platter is not permanently fixed within the drive, resting instead within a removable shell. As a result, there is a limit to how fast it can spin without introducing vibrations strong enough to damage the platter or the read/write heads. Most removables are substantially slower than hard disks.

There is one exception to these principles: the magneto-optical drive uses a different technology to store data. Like magnetic media drives, an MO drive stores data on a circular platter which spins at high speed. The difference is that MO drives use both a laser and a magnetic head, positioned either side of the disk. In this case, it's the laser that moves; the magnetic head covers the radius of the platter and remains still. The laser heats up tiny areas of the platter which the magnetic head then polarises to either north or south, making a "one" or a "zero".

The beauty of the system is that the magnetic polarity of the particle can only be changed when it's heated above 150 degrees centigrade. When that area of the platter cools, its polarity is established and it can't be changed, no matter how strong the magnetic field is. It can only be changed again by heating it. This approach might seem a little complicated and slow, but it's actually very effective.

There are two advantages to MO drives. The read/write head can never come in contact with the platter to damage it, and because data can't be changed without heating the platter, MO cartridges are very stable. Theoretically, most MO carts could last as long as 50 years. Compare this with an average life expectancy around five years for a hard disk, ten for a CD (longer if you look after it), and only two years for magnetic removable media such as floppies, and you'll see what a good deal MO is.

Drive makers

The type of storage space you'll buy will depend on your needs. If you need more storage for your programs and documents that you use regularly, then an external hard disk is your best bet. If you need space to archive old files (particularly large graphics files), a magneto-optical drive or even a CD-recordable drive might be a better solution. Lastly, if you need more space for current documents, or need your data to be portable, a removable drive such as the Zip Drive would be your best choice.

Whichever type you buy, you'll find that the guts of the drive inside are made by only a handful of different firms: hard drive makers include Fujitsu and IBM, for example. Manufacturing drives – especially hard drives – is a very expensive business to set up, costing many millions of pounds.

Many firms, such as MicroNet, simply buy in a ready manufactured drive, put it in their own casing and supply it with cables and software. We've mentioned in our tests (which start overleaf) which mechanism is used in each drive.

When you're looking around for a drive, it's important to focus on accessories like software and cables, as well as technical support and manuals. Most of the drives are solid and reliable; it's the extras that can make all the difference. ➤

About our tests

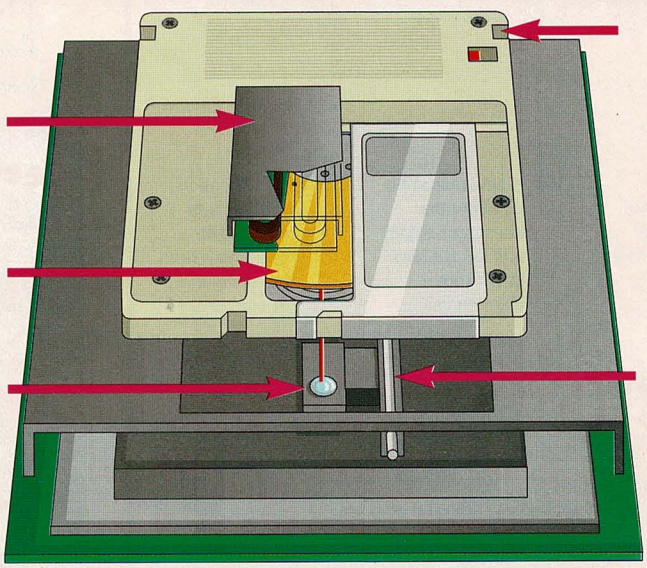
We used *Norton System Info* on a PowerMac 7200/75 to test all of the drives. *System Info* conducts read and write tests in sequential blocks from 1K up to 256K. The actual rating each drive is given is an average of the results for each block size, giving an overall indication of performance. We also conducted a real-world test, again using a 7200. We copied a 25Mb folder containing various files, ranging in size from 8K to 10Mb, from our control drive (a 1Gb Fujitsu internal hard drive) to each drive in question.

The times for these tests are given in each review. However, this test gives you only a rough indication of one drive's speed when compared to another. The benchmarks from *Norton System Info* provide a much more accurate and comprehensive profile of each drive's performance.

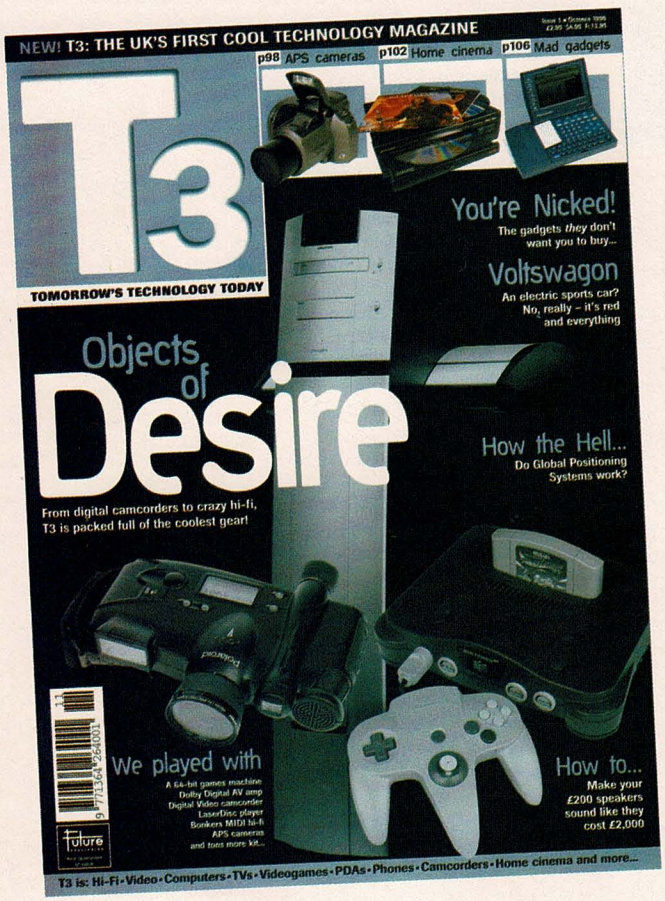
Mini-SCSI

Some drives, notably the more portable models, come with mini-SCSI connectors. These have the same number of pins as standard SCSI connectors, but have been made physically smaller, with sprung clips on the plugs rather than on the sockets. Mini-SCSI connectors are less bulky and easier to use, but few drives use them, so connecting the drives into a SCSI chain usually requires a special cable.

How a magneto-optical works


Electro-magnet: data is fed through here, producing a magnetic field which alters only the areas of the platter heated by the laser.
Platter: the magnetic particles are protected by a thin layer of clear plastic.
Laser: this heats up a tiny portion of the disk, so its magnetic polarity can be altered.
Casing: the magneto-optical platter is encased to protect it from wear and tear. Data on the platter can only be changed when the surface of the disk is heated, making it a very stable storage medium.
Slide carriage: this moves the laser across the radius of the disk to any individual data track.

What the *hell* is this?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Hard drives

Hard drives are the fastest and highest-capacity storage medium you can get, which is why almost all Macs and clones have come with one installed. External hard drives are basically a good buy if you need lots of fast storage. They are perfect for running your applications from, for keeping a backup of your System Folder and for general storage. The disadvantages are that they can't be upgraded, only replaced, and you can't count on them to last longer than around five years.

In terms of cost per Mb, hard drives are one of the most expensive storage media you'll find, and without the option of removable cartridges there's always the possibility that you'll run out of space in the future.

When you're looking to buy a hard drive, the critical things to check are: capacity, speed, MTBF (mean time between failures – the life expectancy of the drive, typically around 100,000 hours) and extras, including the driver software, SCSI cable and terminator. Most drives come with everything you need to connect them to your Mac. If yours doesn't, you're looking to add around £25 to the cost of the drive to get the essentials – bear this in mind when you're hunting for bargains.

The life expectancy of hard drives and removable magnetic media is relatively short, because of the limitations of the technology. Hard drives are incredibly complex devices that work at very high speeds. Consequently, the components do wear out after prolonged use. How long yours will last depends on how heavily it's used and the environment it's kept in – for example, extremes of temperature shorten the life of a drive considerably. Hard drives have been known to last for ten years or more, but not reliably. Removable magnetic media suffer similar problems, compounded by the fact that cartridges are subject to shocks that occur while you carry them around, and they suffer problems related to stray magnetic interference. Removable magnetic media (including 1.4Mb floppy disks) have a reliable life span of up to two years.

These days, it's really not worth buying a drive smaller than 1Gb. This sounds huge, but at the rate at which applications and the Mac's OS are ballooning in size, 1Gb won't last long.

Performance Direct 2Gb

PRICE	£375	**PRICE PER MB**	18.3p	**CONTACT**	Performance Direct on 01784 477477	**WEB SITE**	http://www.performance_direct.co.uk/
COMES WITH	*Anubis 2.5.4* software, cables, terminator					**MECHANISM**	IBM

Not terribly exciting to look at, this drive is housed in a fairly dull and functional grey plastic casing with two lights on the front, one to indicate power and another that flashes as the drive is accessed. On the back are the standard two 50-pin SCSI connectors, a SCSI ID switch and a power switch. The casing is small (16 x 25 x 6cm), compact and easily stackable if you buy more than one.

The driver software is particularly good, and CharisMac Engineering's *Anubis 2.5.4* provides you with an impressive array of options for set-up and maintenance. The interface is one of the best we've seen on any formatting program, and the whole thing is easy to get to grips with. There are also options that enable you to lock and password-protect the volumes on the drive – handy if you store sensitive data.

A comprehensive manual supplements the software, explaining all the jargon and what you need to know to get the best out of the drive. The manual for the drive itself is also excellent, with trouble-shooting tips and sound set-up advice.

The Performance Direct (previously SimmTech) drive comes already formatted, but you can also use *Anubis* to partition the drive into smaller volumes. A separate mounting utility is supplied should you have trouble getting the drive icon to appear on your Desktop, and a SCSI cable and terminator are also in the box. The cable is a decent length, with robust connectors, and the terminator is of an equally good quality.

The mechanism is from IBM, and it's pretty quick off the mark. Our 25Mb test folder copied in 54 seconds – not amazingly fast, but certainly not embarrassingly slow. Overall, the drive performed extremely well and was 40% faster than our benchmark hard disk – impressive given the low price.

MF rating 92%

TekWare 2Gb

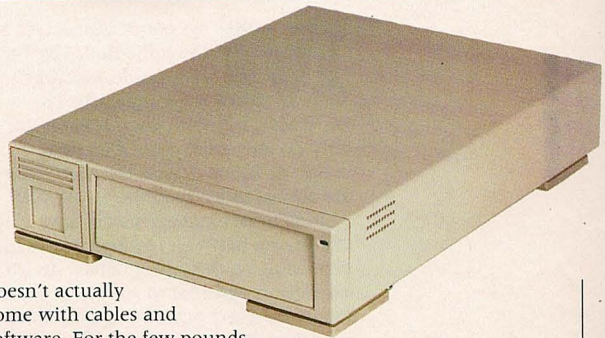
PRICE	£465 (plus £12 shipping)	**PRICE PER MB**	23p	**CONTACT**	TekWare on 01384 392121	**E-MAIL**	106256.3202@compuserve.com
COMES WITH	Power cable (£10 for additional 18-inch SCSI cable)					**MECHANISM**	Seagate

TekWare's 2Gb hard drive is a large beast, measuring 23 x 31.5 x 7cm. It comes in a pizza-box-type steel casing, which takes up a lot of desk space for a 2Gb drive. Compared with similar drives on test, this unit is a monster, and there's no need for it to be. Around the back of the case are two 50-pin SCSI connectors, an illuminated power switch and a SCSI ID selector. We're not quite sure how an illuminated power switch is any help when it's around the back of the drive, but there you have it.

In the box is a power cable and... um, that's it. No SCSI cable, terminator or driver software is supplied, so you'll have to budget for these separately. TekWare can supply you with an optional SCSI cable costing around £10, depending on the length you need. For a drive costing £90 more than the Performance Direct drive, this seems a bit stingy.

The drive comes with a basic connection manual and a one-year warranty, but there are no other detailed instructions. The mechanism itself is by Seagate, and it performs very well. Our test folder copied in a reasonably fast 55 seconds, and the benchmarking results showed the drive to be 19% faster than our Fujitsu benchmark unit. Overall, that makes the drive third-fastest on test, with the MicroNet 2Gb just behind it.

All in all, the TekWare is technically a good drive, but it's bulky and overpriced when compared to the Performance Direct and d2 drives, particularly since it doesn't actually come with cables and software. For the few pounds that it would cost TekWare to add these essentials, it would be able to offer a much better product.



MF rating 72%

Electronique d2 2Gb AV

PRICE £512 **PRICE PER MB** 25p **CONTACT** Electronique d2 on 0171 833 0009
COMES WITH *Driver d2 (Software Architect)* software, cables, terminator, stand **MECHANISM** IBM

Electronique d2's 2Gb drive is a sleekly-designed affair that would look just as much at home in an art gallery as it will beside your Mac. Housed in an elegant dark grey casing, the drive will either sit upright, using the provided stand, or lie flat – the more traditional position for a drive. It's certainly a departure from the dull, pale coloured boxes of most computer peripherals, and easily the winner of our style prize.

Measuring 23 x 22.5 x 5cm, it's not as compact or as easily stackable as something like the Performance Direct drive, but stood upright it hardly takes up any room at all on your desk. A large green illuminated button on the front serves as both the power switch and the drive access light, while round the back you'll find the two standard 50-pin SCSI connections and a SCSI ID selector.

Along with the drive you get the aforementioned stand, a SCSI cable and terminator, as well as Software Architects' driver and formatting software. The latter is a standard package that many drive manufacturers use, simply giving it their own name (d2 calls it *Driver d2)*. It's a fairly basic program, but it offers all the formatting and partitioning options you'll need as well as supporting a variety of removable drives – very handy.

The SCSI cable provided with the drive is a little short and could do with being another six inches longer, but it's a good quality cable. The manual is basic but covers d2's entire range. There are set-up instructions provided, but very little else, and there's no troubleshooting advice whatsoever.

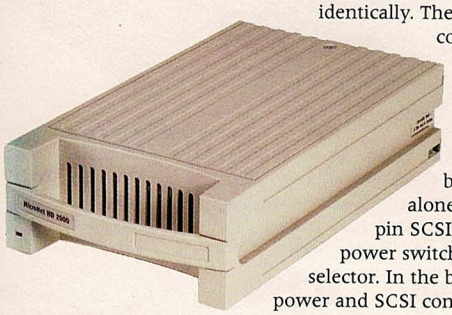
In use, the drive is lightning-fast. Our 25Mb test folder copied over in a rapid 29 seconds, making it the quickest drive on test by far. The benchmarks showed the drive to be 45% faster than our base unit – very impressive indeed. Although at over £500 it's not the cheapest 2Gb drive on test, the sheer speed of the Electronique d2 hard drive makes it a compelling choice.

MF rating: 90%

MicroNet 2Gb

PRICE Stand-alone unit, £586; DataDock module, £529 **PRICE PER MB** 29p **CONTACT** MicroNet on 01926 470460 **WEB SITE** http://www.micronet.com/
COMES WITH *MicroNet Utility* software, cables, terminator **MECHANISM** Micropolis

MicroNet supplies this 2Gb drive in two configurations: as a stand-alone and as a DataDock removable module. Our test drive was a DataDock module costing £529, but the stand-alone performs identically. The stand-alone unit comes in a compact and robust grey steel casing that gives the drive a solid feel.



Around the back of the stand-alone unit are two 50-pin SCSI connectors, a power switch and a SCSI ID selector. In the box you'll find power and SCSI connection cables and a terminator. (Cables aren't supplied with the DataDock module as they come with the DataDock itself – see page 78.)

MicroNet Utility is the formatting software and it's very impressive indeed. It's easy to understand if you're a beginner, but under the surface there is a multitude of options for fine-tuning your drive, enabling you to get really technical. *Utility* covers practically all types of storage media, and will mount anything short of a dead camel on your Desktop. Even then it'll have a go.

A manual that covers both setting up and formatting is supplied with the software, but it gets very technical about halfway through. Fortunately the drive comes already formatted, so you won't be forced into learning about the finer details of boot blocks unless you get some bizarre urge to do so.

Performance wise, the MicroNet was a little disappointing compared to some of the other drives. Overall, it was the slowest of the hard drives on test, but in its favour was its consistent performance across the range of read/write tests. While the other drives excelled in certain areas and did poorly in others, the MicroNet fared well across the board.

The drive came second in the real-world test rankings, taking 52 seconds to copy a 25Mb folder, but came last on the benchmarks, rating only 14% faster than our base drive. However, it has excellent software and is a solid, reliable drive.

MF rating 82%

Magneto-optical drives

Magneto-optical drives are the Rolls Royce cars of removable storage: they are comparatively expensive, but with good reason. Not only do they store more data than magnetic-based drives, but the media are almost indestructible.

Traditional magnetic media have a life expectancy between two and five years, depending on the type you buy. An MO cartridge is expected to last for 50 years – longer than any other storage medium available. MOs are currently the only storage devices where the data cartridges are guaranteed to outlast the actual drive – the life expectancy of any electronic device is around ten years.

MO drives are also faster than other removable systems. The average MO drive runs at half the speed of a hard drive, and is catching up as the technology improves. One day MO drives may even replace the hard disk as your Mac's main drive.

All MO drives have a built-in cache which varies in size between 1Mb and 4Mb. The cache is a area of RAM that stores data before it's written to the drive. This speeds up copying files dramatically, and frees your Mac up to do other things while the drive gets on with writing the data from the cache to the disk. Generally speaking, the larger the cache, the faster the drive.

Things to look for in an MO drive are capacity, speed, cache size, backwards compatibility (can the drive read older optical carts?) and price. All of the drives we look at this issue – bar one – are the 5.25-inch 2.6Gb capacity drives which are just beginning to reach the market in quantity. These drives are more expensive than the older 5.25-inch 1.3Gb drives, but they are faster, hold more data and can read and write to 1Gb, 1.3Gb, 2.3Gb and 2.6Gb cartridges.

One of the benefits of MO drives is that they use standard cartridges. Unlike most removable drives, it doesn't matter which drive you buy; any 2.6Gb mag-op cartridge will work in it. They will also use the older 1.3Gb optical discs that are still available, but most can't use the 650Mb or 600Mb carts. None of the current MO drives will be able to use the 5.2Gb cartridges due this spring.

Olympus 230Mb PowerMO

PRICE £351 **PRICE PER MB** £1.53 (initial) **CONTACT** Mac & More on 01442 870300
COMES WITH *Rapid-Trak* software, connection cables, external power supply, 230Mb cartridge **MECHANISM** Olympus

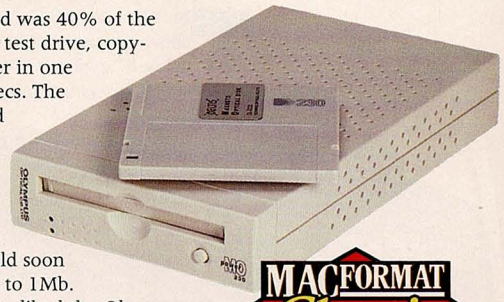
The Olympus 230Mb mag-op is the only 3.5-inch MO we look at this issue. We're checking it out because it's substantially cheaper than any other 230Mb drive available.

The drive is housed in a very compact grey plastic casing. On the back there are two mini-SCSI connectors, a SCSI ID switch and a power switch. The mini-SCSI connectors are a bit of a mixed blessing. While smaller and easier to connect than the standard SCSI connectors, so few devices use them that daisy chaining things together can become a problem. The scarcity of the mini-SCSI cables is offset by the fact that they're physically easier to connect. Also unusual is the fact that the drive doesn't have its own power supply, and is instead fed via a dinky little transformer that doubles as a plug. Additional cartridges cost about £11.50, or just 5p per megabyte.

Also supplied is MacPeek's *Rapid-Trak* formatting utility – an enhanced version of the popular *Spot-On* which supports a wider range of removable media. The main drawback here is that the software only comes with electronic documentation. We prefer a printed manual every time – you can't read electronic documentation if your Mac refuses to start up.

On the plus side, this drive comes with a three-year warranty. If the drive fails within this period, distributor Mac & More promises to have a new unit on your doorstep the following day.

In use, the 230 is quick. It beat two of its larger 2.6Gb cousins on our benchmark test and was 40% of the speed of our test drive, copying our folder in one minute 32 secs. The unit we used came supplied with a 256K cache, but there are reports that this could soon be increased to 1Mb.



Overall, we liked the Olympus 230Mb PowerMO immensely. It's compact, neat, fast, comes with good driver software, has a long-term warranty and is very cheap.

MF rating 91%

Xyratex 5000 2.6Gb

PRICE £1,409 **PRICE PER MB** 53p (initial) **CONTACT** Performance Direct on 01784 477477 **WEB SITE** http://www.performance_direct.co.uk/
COMES WITH *FormatterOne* software, connection cables, terminator, 2.6Gb cartridge **MECHANISM** Maxoptix (with 1Mb cache)

Xyratex's 2.6Gb MO drive comes in a grey case, though this one is made out of plastic rather than steel. It's a large drive, measuring 21 x 27 x 6cm, quite a lot of desk space when lying flat. (It does fit rather neatly under a filing tray!) At the back of the casing are the obligatory two 50-pin SCSI connectors, a SCSI ID switch and the power switch. Inside, the Xyratex is based on the same mechanism as the MicroNet below: a Maxoptix unit with a 1Mb cache.

With the unit you get *FormatterOne* driver software, as well as formatting software from Software Architects, this time renamed *Xyratex Formatter*. It's the same software as *Driver D2*, just in different corporate clothing.

The supplied SCSI cable is a generous metre long and the SCSI terminator is also of good quality. Additional cartridges cost around £53 – on average, a superb two pence per megabyte.

The documentation supplied with the drive is good, and includes step-by-step set-up instructions as well as a good troubleshooting section.

Performance-wise, the Xyratex drive is virtually identical to the MicroNet. This was to be expected, since they use the same mechanism. The Xyratex copied our test folder in one minute 26 seconds and the benchmarks showed the drive to be 43% the speed of our own control hard drive. This isn't bad; in fact it's 3% faster than the MicroNet drive, although this is probably due to the different driver software.

Overall, it's a good bundle. Though not as fast as the Olympus, the Xyratex drive offers reasonable performance and good value for money.

MF rating: 90%

MicroNet 2.6Gb

PRICE Stand-alone, £1,527; DataDock module, £1,299 **PRICE PER MB** 57p (initial) **CONTACT** MicroNet on 01926 470460 **WEB SITE** http://www.micronet.com/
COMES WITH Driver software, connection cables, 2.6Gb cartridge **MECHANISM** Maxoptix

Like the MicroNet hard disk on review, our 2.6Gb MO test unit is a DataDock module costing £1,299 (see page 78). The stand-alone version costs £1,527 and comes in a steel casing that could withstand a nuclear war, giving the drive a reassuring, robust feel. On the back are the obligatory two 50-pin SCSI connectors, a SCSI ID switch and the power switch. Inside is a 5.25-inch Maxoptix mechanism with a 1Mb write cache.

With the drive you get *MicroNet Utility*. This is MicroNet's own program, meaning it's guaranteed to work with your drive – something not every manufacturer can claim. MicroNet also offers free lifetime upgrades for the utility to anybody who's bought a drive. These can be obtained either by calling MicroNet UK or visiting the company's Web site at **http://www.micronet.com**

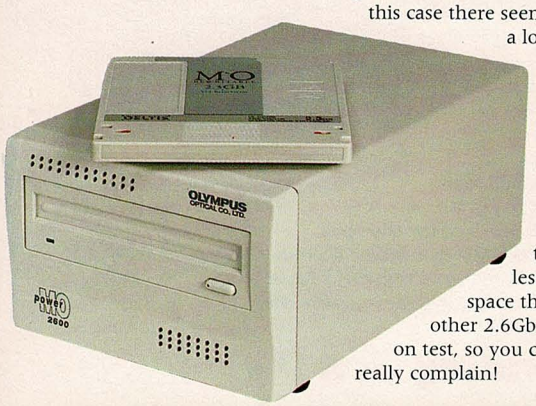
In use the drive isn't as fast as the others on test. Our 25Mb folder copied in one minute and 45 seconds, and the benchmarks showed the drive to be exactly 40% of the speed of our base drive. For an optical, this is pretty good, but it's not as fast as the Olympus.

The drive did have a problem mounting one of our existing 1.3Gb carts, insisting that it needed formatting, even though it had already worked fine on a regularly-used drive. There were no problems formatting and using a blank 1.3Gb, but if you are intending to upgrade your existing magneto-optical drive to a 2.6Gb drive, or you regularly have to transfer data between drives, this may be something to consider. Overall, however, it's an excellent package.

MF rating 88%

Olympus 2600 PowerMO

PRICE	£1,878	PRICE PER MB	71p (initial)	CONTACT	Mac & More on 01442 870300
COMES WITH	Rapid-Trak software, cables, active terminator, 2.6Gb optical cartridge			MECHANISM	Olympus



The Olympus 2.6Gb MO drive comes in a grey steel casing measuring 27 x 17.5 x 12cm. Inside this case there seems to be a lot of fresh air; you might wonder why the drive isn't half as tall. Still, it takes up less desk space than the other 2.6Gb opticals on test, so you can't really complain!

On the back are two 50-pin SCSI connectors, a power switch, a SCSI ID selector and a switch for turning the active SCSI termination on or off. The latter feature means you don't need to buy an external terminator for your set-up, unless you connect the drive in the middle of a SCSI chain. Inside the box is Olympus' own mechanism with a 4Mb write cache and the active termination. Extra carts cost around £53, meaning the cost is just 2p per megabyte.

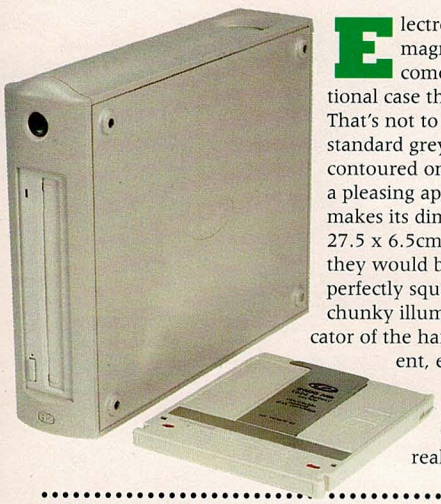
Included with the drive are the very capable *Rapid-Trak* software from Mac-Peek, and an unformatted 2.6Gb cart. As with the 230Mb PowerMO, the 2600 comes with a three year warranty – if your drive dies within this time, you'll get a replacement delivered to your door the following day.

In our benchmarking tests, the 2600 was nearly twice as fast as the other MO drives, copying our test folder in a mere one minute eight seconds. However, this was with write-verify switched off – all the other drives were tested with it switched on. Despite repeated attempts, we couldn't switch write-verify back on again. Because of this, the speed rating we got should be treated with suspicion. However, we still think this drive beats the others on test. It's expensive, but the speed and three-year warranty make it a good choice. The only thing that stops this drive from getting a Classic award is its higher price.

MF rating 89%

Electronique D2 2.6Gb

PRICE	£2,114	PRICE PER MB	79.5p (initial)	CONTACT	Electronique d2 on 0171 833 0009
COMES WITH	*FormatterOne* software, connection cables, active terminator, 2.6Gb cartridge			MECHANISM	Sony



Electronique D2's 2.6Gb magneto-optical drive comes in a more traditional case than its hard drive. That's not to say it's dull – it's a standard grey plastic job, but contoured on one side to give it a pleasing appearance. This makes its dimensions of 25 x 27.5 x 6.5cm less obtrusive than they would be if it was a perfectly square box. The same chunky illuminated green indicator of the hard disk is also present, except that in this case it's a power indicator rather than a switch. The real power switch is round the back with the two 50-pin SCSI connectors, SCSI ID selector, and a switch to enable the active termination. On the inside it houses a Sony mechanism and a 4Mb write cache.

The driver software supplied is the standard *FormatterOne* package, which seems to be becoming increasingly popular among manufacturers. The SCSI cable supplied is of good quality, but the big let-down is the documentation, which covers all of D2's drives, rather than being specific, and has no troubleshooting or tips sections.

In use, though, the d2 really comes into its own. Our 25Mb test folder copied in one minute 17 seconds, and benchmarking rated its speed as 73% of our control hard drive's – that's quick for an optical, especially since the price of additional carts again works out at about two pence per megabyte.

Although it's fast, the d2's expensive at over £2,000. It's probably only something you should consider if you're a professional user. If, however, the price was to drop by around £500 it would be a real winner. Electronique d2 says although the drive has a high retail price, the street price is around £1,650, so it's worth shopping around.

Our only other gripe with this drive is that the software is only a standard package. For this kind of money you would expect driver software that had more extensive features.

MF rating 83%

Removable drives

Removable drives are indispensable if you use your Mac for graphics, and extremely handy if you use it for just about anything else. Not only can you back up your files and create archives, but the option to remove the storage element of your drive makes your data completely portable.

With a removable drive, you can exchange data with your friends and colleagues – all they need is the right type of drive. Removables also have the advantage of an almost limitless capacity – when one of your cartridges is full, you simply pop in another. It all sounds too good to be true, doesn't it?

Almost all removable media are magnetically-based. We have treated magneto-opticals as the exception to this rule, because although technically they are magnetic, they do work in a rather different way. MO drives also use a laser as part of the system.

Removable media are slower than either internal or external hard drives, as a rule, although the technology is improving and catching up rapidly. The reason that removable media don't reach the same speeds as hard drives is that a cartridge can't work in the same controlled inert gas environment a hard drive unit enjoys. Removable media cartridges obviously can't be sealed in this way, or the read/write heads of the drive wouldn't be able to get at the data. And because the platter isn't fixed to a spindle, it can't be spun at the same high speeds as the platter in a hard drive. The combination of these two factors has the overall effect of limiting both how much data can be packed onto a removable magnetic-based cartridge, and how fast that data can be transferred. Only the Jaz drive reaches speeds similar to the average hard disk.

The main factors to look for when you're buying a removable drive are capacity, speed, compatibility and price. Compatibility is often the most important factor – especially if you're going to be transferring your data between drives. The humble floppy is by far the most common piece of removable media, but it's slow, holds only 1.4Mb of data and, at about 50p per floppy, costs you around 38p for every megabyte you store.

SyQuest EZ135

PRICE	£105	**PRICE PER MB**	78p (initial)	**CONTACT**	SyQuest on 0800 526559
WEB SITE	http://www.syquest.com/				
COMES WITH	Driver software, connection cables, 135Mb cartridge (extra cartridges £18).			**MECHANISM**	SyQuest

The EZ135 is SyQuest's answer to Iomega's Zip Drive (below), and it's designed to fill much the same gap in the market. It's a 3.5-inch magnetic media drive, and it uses 135Mb removable cartridges.

Housed in a dark grey casing with purple trim, it's a compact unit that takes up less desk real estate than the Zip. The EZ135 uses the standard 50-pin SCSI connectors and has a power switch. Its SCSI ID can be set to any number between 1 and 6, just like most other external drives.

With the drive you get SyQuest's own driver software that mounts, formats and partitions the cartridges. Like the Zip, the drive itself doesn't have an internal power supply, but uses a mains transformer. This is a bulky thing that sits next to the drive when in use, severely limiting its portability. You also get a decent quality SCSI cable, and good documentation that covers the areas of both setting up and troubleshooting. Best of all, it has a few advantages over the Zip.

In terms of speed, the EZ135 is very fast for a removable drive – much faster than the Zip. In our benchmarking tests it scored a rating of 65% in comparison with the 1Gb Fujitsu benchmark hard drive. This makes it nearly three times faster than the Zip, and its larger capacity, working out at about 13.5p per additional megabyte, also makes it a more attractive proposition.

Balanced against this is the fact that it's not as well established as the Zip drive and has been officially discontinued by SyQuest in favour of a new 270Mb drive due in the next month or so. This raises the question of how long 135Mb cartridges will be available for the EZ135. SyQuest says that support will continue for the foreseeable future, but in an industry as volatile as the computer business, that could be as soon as next week.

MF rating 85%

Iomega Zip Drive

PRICE	£117	**PRICE PER MB**	£1.17 (initial)	**CONTACT**	Iomega on 0800 973194
WEB SITE	http://www.iomega.com				
COMES WITH	Driver software, connection cables, power supply, two 100Mb disks (extra carts £14)			**MECHANISM**	Iomega

Iomega's Zip drive has been around for over a year now, which is getting on a bit in terms of storage technology. Taking its own 100Mb custom cartridges, it's a 3.5-inch drive housed in a blue plastic casing a little larger than a compact disc case. It doesn't seem particularly robust. This is another drive that comes without its own power supply, instead using an external mains adaptor that doubles as a plug.

On the back are two 25-pin SCSI connectors and a SCSI ID selector switch. The latter only enables you to choose between ID numbers 5 and 6. Unusually, there is no power switch either. The 25-pin SCSI connectors are identical to the one on the back of your Mac, so you can use a standard 25-pin to 50-pin SCSI cable to link the drive into a chain.

Along with the drive you get Iomega's own disk tools, which come on their own Zip cartridge. These tools enable you to mount, format and partition Zip carts. A special Extension is provided, enabling you to connect the drive to another Mac quickly, without calling on the full functionality of *Zip Tools*. The software is very good and the documentation is superb, covering every aspect of setting up and troubleshooting.

A year ago the Zip was considered a major technological breakthrough, and a cheap, fast alternative to other removable media. When we reviewed it back in MACFORMAT 34, we gave it a Classic award. With the price of storage now dropping through the floor, though, the Zip looks dated. Its performance is relatively poor, with our tests showing its speed to be a mere 22% of our benchmark drive's performance. It's cheap at 14 pence per additional megabyte of storage, but it can't match drives available today. In its favour, it's now a well established medium that you'll find turning up everywhere.

MF rating 81%

Xyratex MaxIt

PRICE	£352	**PRICE PER MB**	65p (initial)	**CONTACT**	Performance Direct on 01784 477477
WEB SITE	http://www.xyratex.co.uk/				
COMES WITH	*FormatterOne* software, connection cables, a 540Mb disk.(extra disks £51.70)			**MECHANISM**	Xyratex

Available in two colours, bright yellow or blue, the MaxIt drive is small, compact and designed to be portable – much like the Zip. It comes with a stand in an equally garish colour. On the back of the drive are two mini-SCSI connectors, a SCSI ID selector and a power connection. There is no internal power supply; instead the drive relies on a rather hefty external mains adaptor. Changing the SCSI ID selector requires the use of a special tool, which, although it's supplied, is a nuisance if you frequently connect the drive to different Macs. There is no power switch, which is also a pain.

In the box you get two SCSI cables, one for connecting the drive to your Mac and another for daisy-chaining it to any peripheral device that also has mini-SCSI connectors. The cables are of good quality, and have die-cast metal connectors rather than the usual plastic. You also get a comprehensive manual and *FormatterOne* driver software.

The drive itself is capable of reading both its own MCD disks and SyQuest's 270Mb 3.5-inch disks. This means that it retains compatibility with an older standard – something you're likely to appreciate if you're a professional print user. The cost of additional cartridges works out at around ten pence per megabyte.

Performance wise, the MaxIt falls – not surprisingly – between the Zip and Jaz drives. Our test folder copied in a respectable one minute six seconds, and the benchmarking software rated it at 58% of the speed of our control unit. This isn't fabulously quick – SyQuest's own EZ135 is quicker – but then the MaxIt holds four times as much data.

The MaxIt is a good drive, but compared with the competition it's overpriced. At nearly three times the cost of the EZ135 and Zip drives, it needs either to go faster or to hold more data before it's serious competition.

MF rating 76%

MicroNet Jaz Drive

PRICE	£469	**PRICE PER MB**	46p (initial)	**CONTACT**	MicroNet on 01926 470460.
WEB SITE	http://www.micronet.com/				
COMES WITH	*MicroNet Utility* software, connection cables, terminator, 1Gb cartridge (extra carts £90)			**MECHANISM**	Iomega

The Jaz Drive is Iomega's follow-up to the hugely successful Zip, and the technology is licensed to a number of vendors, including MicroNet and Computer Warehouse. We tested MicroNet's version. It comes in a sturdy grey steel casing that makes the drive rather heavy, but extremely durable. The build quality of this drive is superb; it looks like it will long outlast your Mac. On the back are the obligatory two 50-pin SCSI connectors, the power switch and a SCSI ID selector. The only features on the front, aside from the drive slot, are an eject button and drive access light.

With the drive you get MicroNet's own driver utility. It's useful because it can recognise, format and mount nearly any type of storage media you own, not just the Jaz drive. This utility is updated regularly, and buying any MicroNet drive entitles you to free lifetime updates (see page 83). You also get get a good 25-pin to 50-pin SCSI cable for connecting the drive to your Mac, a SCSI terminator and your first 1Gb Jaz cart. Additional Jaz carts can be bought from almost any Mac vendor at around £90 – a very reasonable 8.5p per megabyte.

The Jaz is extremely fast for a removable, and is capable of matching the speed of a small hard disk. In our original tests (we first looked at this drive in MACFORMAT 38), the Jaz was 1% faster than our PowerMac 7200's internal 500Mb hard disk. Compared to our 1Gb Fujitsu benchmark hard drive, the Jaz rated an astonishing 88%, making it the fastest removable drive we tested.

The Jaz Drive is an incredible product and offers lots of very cheap, very fast storage. The licensing of the technology to other drive manufacturers will help to create competition and keep prices down, ensuring the long-term survival of Jaz as a widespread storage medium.

MF rating 94%

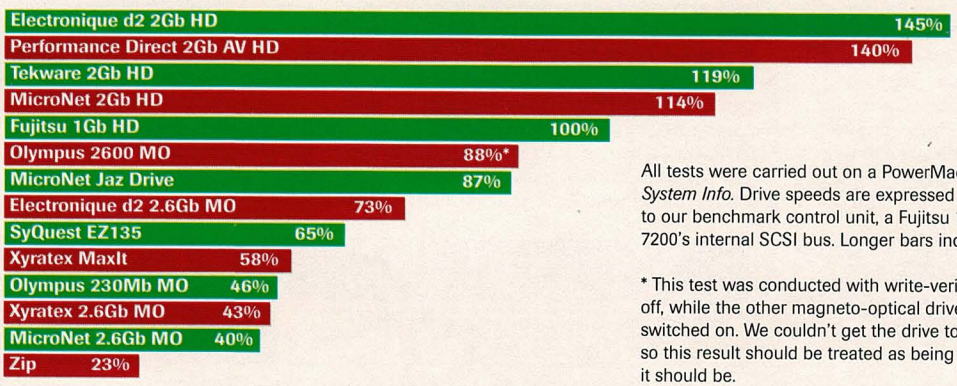
And the verdict is...

We're most impressed with the new 2.6Gb MO drives, but at between £1,400 and £2,000, they're hardly an option for everybody. What makes them special is their balance of speed, capacity and lifespan.

For cheaper short-term storage, the Jaz drive offers the best all-round solution for removable media. It's quite cheap, very fast and is rapidly becoming widespread. At £500, though, it's still a bit costly if you're on a strict budget. For smaller removable media, we'd recommend both the Zip and SyQuest's EZ135. The EZ135 is technically the better drive, but Zip is much more widely established and a better option if you send a lot of DTP work to bureaus or printers.

For general day-to-day storage, a fixed hard drive will provide you with the speed and capacity you demand. We liked d2 and Performance Direct's 2Gb drives. The former, an AV drive, is ideal if you use video and sound on your Mac.

Also mentioned in dispatches are MicroNet's DataDock modules. After having them in the MACFORMAT office for two weeks, they'll be sorely missed, since this system makes moving large chunks of data around very easy.


Electronique d2 2Gb HD 145%
Performance Direct 2Gb AV HD 140%
Tekware 2Gb HD 119%
MicroNet 2Gb HD 114%
Fujitsu 1Gb HD 100%
Olympus 2600 MO 88%*
MicroNet Jaz Drive 87%
Electronique d2 2.6Gb MO 73%
SyQuest EZ135 65%
Xyratex MaxIt 58%
Olympus 230Mb MO 46%
Xyratex 2.6Gb MO 43%
MicroNet 2.6Gb MO 40%
Zip 23%

All tests were carried out on a PowerMac 7200/75 using *Norton System Info*. Drive speeds are expressed as a percentage relative to our benchmark control unit, a Fujitsu 1Gb hard drive on the 7200's internal SCSI bus. Longer bars indicate faster drives.

* This test was conducted with write-verify for the drive switched off, while the other magneto-optical drives were tested with it switched on. We couldn't get the drive to switch to write-verify, so this result should be treated as being around 30% faster than it should be.

Space battle: how they match up

We've quoted two prices for removable and MO drives under price per megabyte (£/Mb) here. The first price reflects the cost of your initial purchase (more expensive than hard drives at first). After that, the cost per megabyte plummets as you buy more carts for your set-up.

Drive	Capacity	Price	Storage type	£/Mb	MF Rating	Contact
Performance Direct 2Gb AV HD	2Gb	£375	Fixed	18.5p	92%	Performance Direct 01784 477477
Tekware 2Gb HD	2Gb	£465	Fixed	23p	72%	TekWare on 01384 392121
Electronique D2 2Gb HD	2Gb	£512	Fixed	25p	90%	Electronique D2 on 0171 833 0009
MicroNet 2Gb HD	2Gb	£586	Fixed	29p	72%	Performance Direct 01784 477477
Olympus 230Mb PowerMO	230Mb	£351	Optical	£1.53 + 5p	91%	Mac & More on 01442 870300
Xyratex 5000 MO	2.6Gb	£1,409	Optical	53p + 2p	90%	Performance Direct 01784 477477
MicroNet 2.6Gb MO	2.6Gb	£1,527	Optical	57p + 2p	88%	MicroNet on 01926 470460
Olympus 2600 MO	2.6Gb	£1,878	Optical	71p + 2p	89%	Mac & More on 01442 870300
Electronique D2 2.6Gb MO	2.6Gb	£2,114	Optical	79.5p + 2p	83%	Electronique D2 on 0171 833 0009
SyQuest EZ135	135Mb	£105	Removable	78p + 13.5p	85%	SyQuest on 0800 526559
Zip Drive	100Mb	£117	Removable	£1.17 + 14p	81%	Iomega on 0800 973194
Xyratex MaxIt	540Mb	£352	Removable	65p + 10p	76%	Performance Direct 01784 477477
MicroNet Jaz Drive	1Gb	£469	Removable	46p + 8.5p	94%	MicroNet on 01926 470460

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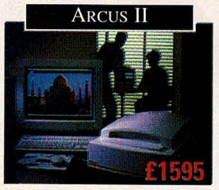

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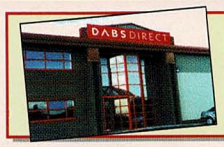

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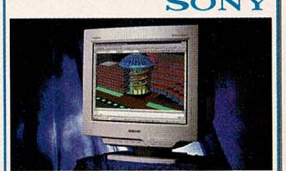

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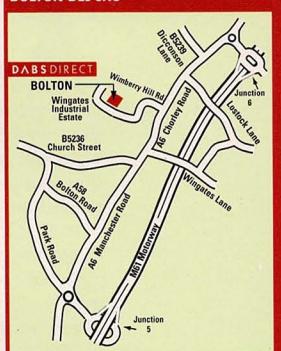

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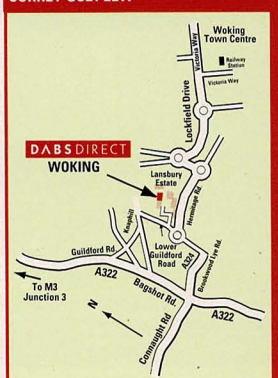

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Live Picture Overdrive 1.0

One of the most powerful image editors around gets a little brother in the form of *Overdrive*. Jim Chandler finds out if the program's features will help you work with images more easily.

The Mac's success was built on its ability to handle graphics, and there's certainly no shortage of image editing packages to choose from. Most of these have something in common: they need huge amounts of memory and processor power to handle the large files you get when you work with high-resolution graphics.

In MACFORMAT 38, we reviewed *Live Picture* and *xRes*, two packages that use a different system to help speed up the image-editing process. Since then, *Live Picture* has spawned an offspring, a kind of "lite" version called *Overdrive*. Like *Live Picture*, *Overdrive* doesn't actually use your high-resolution images during editing. Before you can use an image with *Overdrive*, you must convert it to *Live Picture's* proprietary IVUE format.

IVUE files contain all the information necessary to create a high-resolution image, but in such a way that *Overdrive* only has to work at the resolution of your Mac's screen. Instead of having to chug through a multi-megabyte picture file (like a TIFF or PICT) every time you make a change, your Mac only has to deal with enough data to handle whatever appears on-screen at the time. It doesn't have to load the entire image into memory in one go.

You can create four-point sharpen/blur gradients – useful for adding depth-of-field effects to blend separate elements.

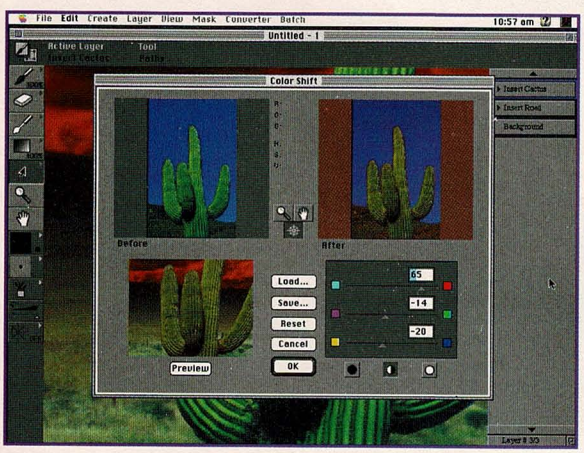
Low-resolution files aren't much use for professional work, so this is where the IVUE format's special features come in. Although you only work on a screen-resolution image, all the high-resolution data is still available in the IVUE file.

Image editing

It's hard to say exactly where Live Picture has pitched *Overdrive*. The firm expects it to sell as a compositing add-on for *Photoshop* in competition with packages like *Collage*, and the price seems about right for this purpose. Take a look at what you get, though, and you find that it's also quite a good all-round image editing package. It's not as comprehensive as the mighty *Photoshop*, but is much faster and cheaper. There don't seem to be many tools from the full *Live Picture* missing from this cut-down version, and this professional status is underlined by its memory requirements. Live Picture recommends 24Mb of free RAM, and even the minimum you'll get away with is 18Mb.

Like *Photoshop* and other similar compositing programs such as Specular's *Collage*, *Overdrive* uses a system of layers. You can use masks and stencils to determine how much of a lower layer shows through a higher one, enabling you to fade smoothly between images or create pin-sharp edges, depending on the way you set up your masks.

Overdrive also enables you to insert text within your image. Once placed, it's no longer editable as text, but it becomes a set of paths which you can make into a mask or stencil. Masks and stencils can

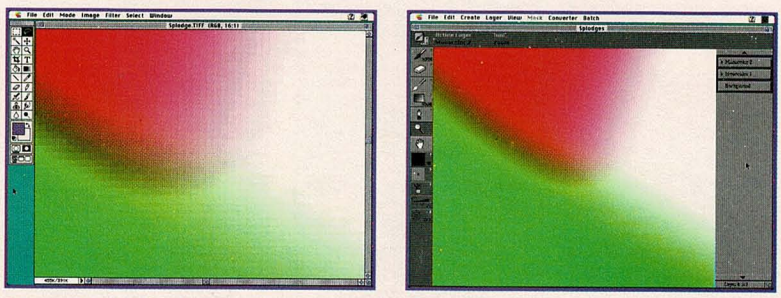


***Overdrive* has quite good facilities for colour correction. This cactus needs "reddening" to fit in this desert sunset scene.**

Compositing

What's this compositing lark, then? Well, you must have seen those clever pictures or montages where images fade seamlessly into one another, or are treated with a variety of effects. Those pictures are known as composites and the process that creates them is called compositing.

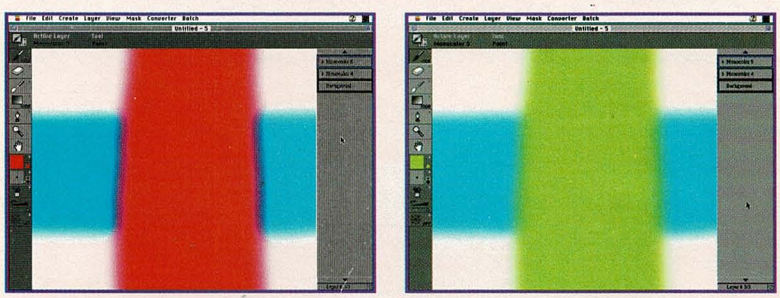
Photographic compositing is a highly-skilled and very difficult artform, but the arrival of computerised compositing packages like *Overdrive* has enabled effects that were impossible to achieve photographically to be created.



Once you've built an image using a conventional graphics program like *Photoshop* (left), zooming in will result in the usual blocky effect. But in *Overdrive* (right), you can zoom in as far as you like on a blend and never see a pixellated edge.

Jargon Busters: image file formats

■ **EPS: Encapsulated PostScript.**
■ **DCS: Desktop Colour Separation. An image file format that splits a picture into separate files for its cyan, magenta, yellow and black components, plus a low-resolution image to allow it to be positioned in a DTP program.**
■ **FITS: Functional Interpolating Transformational System (sorry you asked now?). *Overdrive* uses FITS files to keep track of the images, masks and effects used to produce a picture. FITS files must be converted to high-resolution images (a process known as building) before they can be used in another program.**
■ **IVUE: *Overdrive's* Image View format. This includes all the high-resolution information for an image, but encoded in such a way that *Overdrive* only has to extract the information it needs to produce a screen image.**
■ **PICT: PICTure file. This is the Mac's standard graphics format, because support for it is built into the Mac's operating system.**
■ **Scitex CT: The image format used by high-end Scitex image retouching and planning workstations. CT stands for "continuous tone".**
■ **TIFF: One of the most common image file formats. TIFF stands for Tagged Image File Format. TIFF files can use one of several compression techniques to save space on your hard disk.**



Each of the stripes in this picture (left) exists on a separate layer. Note how the red and blue edges blend together to produce purple. Change the vertical stripe's layer to have a green colour (right), and the stripe and its blends change instantly too.

be reused and copied between layers, enabling you to apply multiple effects to the same area.

There are some reasonable tools available for colour correction, and a palette knife tool that moves pixels around like oil paint, which you can use for jobs like retouching blemishes out of photographs. If you've got a copy of *Photoshop*, however, you'll be better off using that program's comprehensive set of features and only firing up *Overdrive* for compositing work.

That said, *Overdrive* still has some features that leave *Photoshop* standing: for instance, you can apply a **Blur** or **Sharpen** filter on a gradient fill, sharpening some areas and blurring others with no obvious join between them. This can be useful for simulating photographic depth-of-field effects. *Overdrive* also supports four-point gradients; rather than simply fading from one value to another on the opposite side, these gradients fade from values set at each corner, giving far more complex blends than *Photoshop* is capable of creating.

***Overdrive's* forte is compositing: here we've used a sky image and dropped a picture of a girl in front. Then we drew a path around the girl herself, and used it to create a soft mask to remove the background from the original girl image.**

Getting into Overdrive

As sophisticated as it is, *Overdrive* is let down by its user interface. It's not very Mac-like at all and looks more like something from some kind of obscure Unix workstation. (Unix is a venerable operating system used on very powerful computers.) Where *Photoshop* and *Collage* have elegant floating palettes, *Overdrive* has dull, grey slabs for buttons. You can't move them; they're anchored to the edges of the screen and some of them are hard to identify without referring to the manual. Your work area is in the centre of the screen. You can zoom in and out, but there are no familiar scroll bars to navigate around the image with. Instead you have to use the hand tool to drag the image around until you reach the area you want to work on. Mercifully, it's very quick, but why doesn't *Overdrive* work like every other Mac program?

Most annoyingly of all, the program has a **Positioning** mode, which provides tools for moving, scaling and cropping your images, and an **Artistic** mode for blending and painting. It's bad enough having to switch between these modes but, to make matters worse, when you're in **Positioning** mode you can't do anything except use the **Positioning** tools. You can't even close the document you're working on!

Because of these annoying deviations from the conventional Mac interface, you'll have to put in some serious work before you can get anywhere. Even a simple montage of a couple of pictures needs an understanding of *Overdrive's* masks and layers, and the strange user interface doesn't make it any easier to pick up. The designers apparently felt the same way and included three very useful tutorials in the manual. Working through these, using the tutorial files supplied on the CD-ROM, will give you a good grounding in most of *Overdrive's* features. The manual itself contains clear descriptions of the program's tools and step-by-step instructions, as well as some ➤

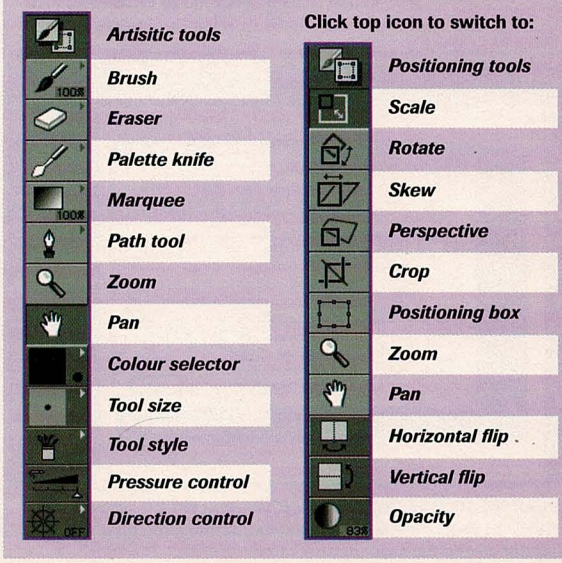
The competition

***Overdrive* is not the only program to offer advanced compositing tools, or to speed up editing by working with low-resolution screen images. Specular's *Collage* is designed to work with *Photoshop* and offers improved compositing tools, but no retouching or painting tools. *Collage 2.0* costs £107; contact Gomark on 0171 731 7930 for more details**

Macromedia's *xRes* is an image editing program that uses a similar but incompatible way of working to *Overdrive's*. You'll find more details on *xRes* and *Overdrive's* big brother *Live Picture* in our new Buyer's Guide, which begins on page 131.

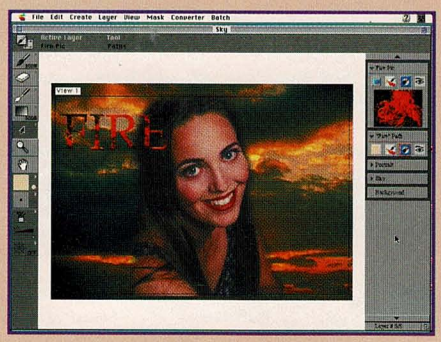
Do what?

***Overdrive's* comprehensive toolbars contain a bewildering array of powerful functions – here's the low-down:**



Bird IVUE: building an image in Overdrive

1 The text tool produces paths to change the text you type into a graphic element. Here, we're using the text path to mask the fire image.

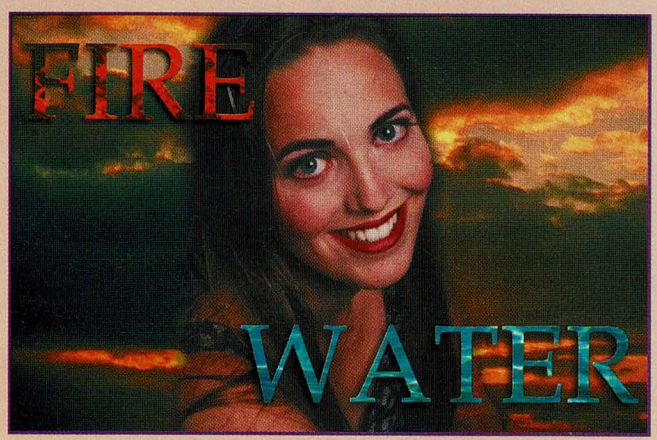


2 The text path with the fire showing through is now a single element in your design, but it needs a drop-shadow to help it stand out.

3 We've used the same path to create a soft-edged stencil for a black drop-shadow, which we can offset slightly and drop in behind.

4 We've used the same method to add the word "WATER". Note the list of layers on the right-hand side of the screen. These are the elements used to create the composite picture.

5 The finished result: building this 14Mb file only took about two minutes. Can't see it winning too many design awards, though...

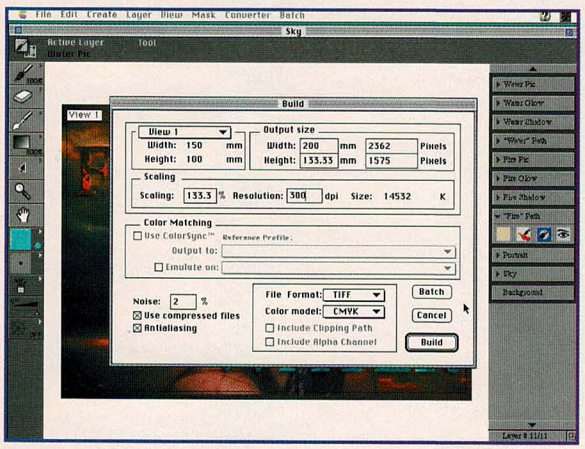


handy tips, but still manages somehow not to become dauntingly thick.

Using IVUE

Converting files to IVUE format can be a pain, but *Overdrive* can convert *Photoshop*, TIFF, EPS DCS and Scitex CT files. The package also includes a stand-alone converter program and a plug-in to enable you to create IVUE files within *Photoshop*.

Overdrive uses a second file format called FITS to keep track of which IVUE files are used in a job, and which masks, stencils and other elements are added to produce the final result. Only when you're satisfied with your composite image do you need to instruct *Overdrive* to build a final, high-resolution image by referring to your FITS file. You can choose the output resolution and file type of the finished image (TIFF, EPS, DCS, PICT, Scitex CT, *Photoshop* or IVUE), and let *Overdrive* do the rest. You can easily use images with different resolutions in your picture; *Overdrive* will convert them to the relevant resolution to work with one another.



After you've completed your design, you can set the parameters for the final build. This is where you can choose the final size and resolution of the finished picture.

If you're worried about your blends perhaps not looking as smooth as you'd like them (which can be a problem when printing to an imagesetter), you can add subtle natural texturing known as noise to help prevent any banding effects. *Overdrive* produces exceptionally smooth blends anyway, so the noise option isn't always necessary.

On an average PowerMac, the conversion process takes a couple of minutes to produce a 20Mb TIFF from a FITS file consisting of three or four large images and masks. This is not bad going, considering the time saved during compositing. If you have lots of FITS files to be processed, you can batch them up to run overnight or during lunch.

That's the theory. In fact, it works remarkably well; apart from the initial hassle of having to convert any image you want to work with, the IVUE format enables you to play with images in real time. Rotating a large graphic in *Photoshop* can take an age, but in *Overdrive* it's instant. Similarly, complex masks and blends can be put together in no time. *Overdrive* has quite comprehensive tools for masking. You can draw an outline with a freehand tool, draw a path with an editable bèzier curve tool or paint a mask using a brush. The brush tools are completely resolution-independent; no matter how far you zoom in on them, you'll never see a pixellated edge.

If you do lots of compositing and need something faster than *Photoshop*, *Overdrive* is well worth a look. For general image editing, though, it's a bit too complicated when compared to its rivals, and it looks positively frightening when compared to something as friendly as *Color It*. If you're a serious graphics professional who's prepared to put in the time to learn it properly, you'll find that *Overdrive's* fast compositing will be well worth the time and money spent.

Live Picture Overdrive

Overdrive offers solid compositing features at a reasonable price, but it's let down slightly by its user interface.

Features	**88%**
Ease of use	**69%**
Documentation	**81%**
Value for money	**86%**
MF rating	**82%**

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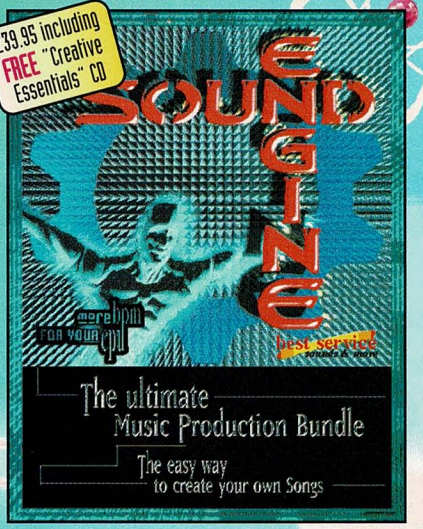
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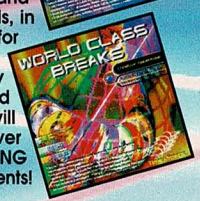

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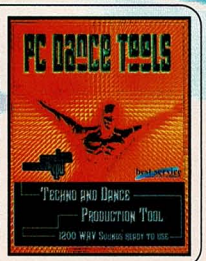

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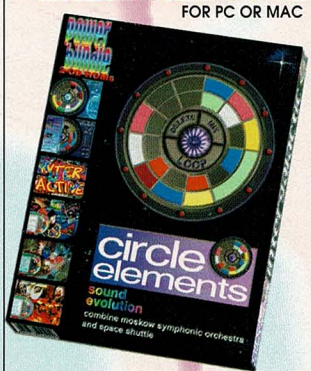

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MAC **Processor:** 68030 • **RAM:** 8Mb **POWERMAC** **Processor:** Any PPC 75MHz • **RAM:** 12Mb **REQUIRES** **System:** 7.1 • **HD space:** 15Mb • **Screen:** 640x480 • **Colours:** 256

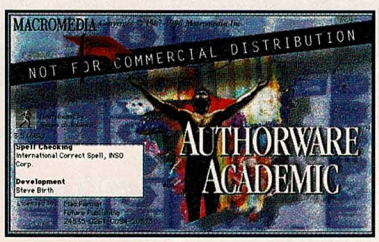
Authorware Academic

Electronic publishing is the way ahead – animation, sound, video and an absence of inky fingers. Matthew Richards gets interactive with a couple of great education offers.

ON THE CD

50-icon trial version of *Authorware Professional 3.0*

The book might not be dead, but electronic publishing is the way of the future, and multimedia, as we all know, adds movie clips, sound bites and animation gloss to all the rather more worthy possibilities of hypertext links and fast search routines. But for anybody who wants to get into the wild world of multimedia development, there's a cost involved. We're not talking about serious commitment, creativity and imagination as much as cold, hard cash... and lots of it. For any school or college worried about where its next textbook is coming from, £1,000 for a copy of *Macromedia Director* (the industry standard) is outrageous, and nearly £4,000 for its sister product, *Authorware Professional*, is completely out of the question.



Despite certain restrictions, the logical approach and icon-based format make *Authorware Academic* ideal for undergraduates.

But where there's a will, there's a way (and we're not talking about bequests here). In a fit of good sense and sensibility, Macromedia has teamed up with Prentice Hall to offer *Director* for just £45.50 and *Authorware* for £150 to educational establishments in general and individual students in particular. The power of "real" multimedia authoring is now available and affordable to budding, would-be publishers and developers, which is the best news to come out of the multimedia industry for a long time.

Assuming you have proof of student status or educational connections, you can pick up your knock-down copy of either of these packages from Prentice Hall direct or, so the folks there tell us, from university bookshops. Be aware, however, there are certain limitations to the programs, which we'll cover in detail. But, for now, let's get a firm grip on what *Authorware* and *Director* do and what the differences are.

The same difference

While these programs are basically similar (having been designed to create multimedia productions), there are some stark contrasts as well. Industry darling *Director* is the program of choice for people who want to make consumer multimedia. In fact, well over half of the "infotainment" or "edutainment" titles on the market today were made using *Director*, either in part or in full.

But if *Director* wears a T-shirt and jeans, *Authorware Professional* is more of a suit-and-tie program, designed for business types who want to make CBT (Computer Based Training) products. The emphasis is less on creative wizardry and more on data handling, with bundles of features to jazz up interactive question and answer sessions, plus a few built-in features for keeping scores, records and generally evaluating a trainee's progress.

That's not to say, however, that you can't make fun multimedia with *Authorware* – just check out the demo version on the disc and the gorgeous "Facetoon" animated face-painting production made with it. But, apart from basic concepts, there's also a big difference in the way they work.

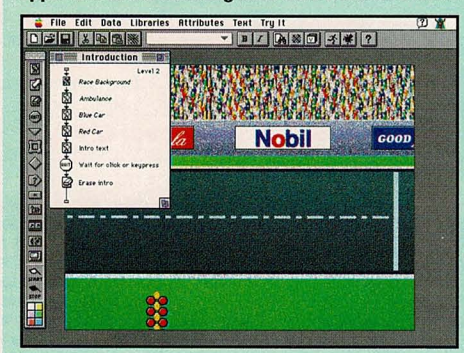
The stage is set

You don't need a brain the size of a planet to get your head round *Director* – a largish moon will do just fine. With a slightly luvvie bent, so to speak, the analogy here is a theatrical stage with so-called "actors" waiting in the wings. These actors might be pictures, sound, animated sequences and so on, and the metaphorical stage is big enough to let 48 of them play their part at any one time.

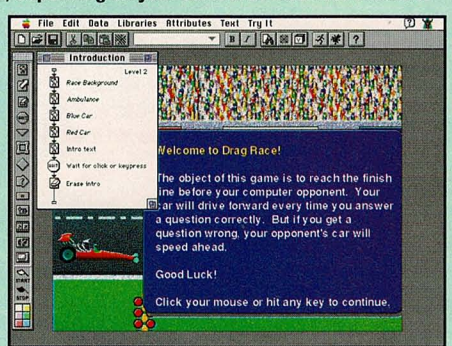
As the multimedia director, it's your job to stage-manage the who, what, when and why of all the subsequent

Author, author!

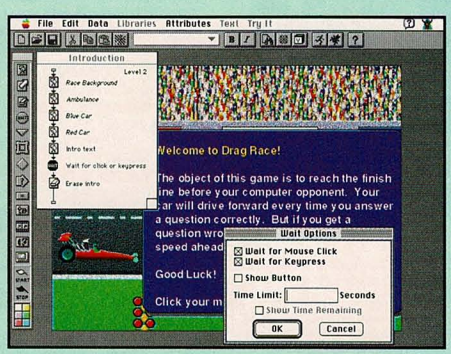
The race is on. Here, we're going to develop a simple multiple-choice quiz in which you have to beat your opponent to the finishing line. Cars will move forward, depending on your correct or incorrect answers.



1 ***Authorware*** **is an icon-based authoring package. You can see all of the icons displayed in a strip down the left-hand side of the screen. All you have to do is drag the particular icon you want to use on to the relevant place on the flowline, which is in the inset white window.**


File Edit Data Libraries Attributes Text Try It
Introduction
Level 2
Race Background
Ambulance
Blue Car
Red Car
Intro text
Wait for click or keypress
Erase Intro
Welcome to Drag Race!
The object of this game is to reach the finish line before your computer opponent. Your car will drive forward every time you answer a question correctly. But if you get a question wrong, your opponent's car will speed ahead.
Good Luck!
Click your mouse or hit any key to continue.

2 **The multimedia presentation starts, logically enough, at the top of the list and works its way downwards. So, first we've built up a race background, ambulance and some cars as successive entries (see inset window), all of which is closely followed by a Wait icon.**



3 **A wait can have a time limit, but we've chosen a simple key press or mouse click. As soon as you carry out one of these actions, the program will wipe out any collection of entities from the screen (here, just the introductory text) with any required transition effect.**

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vs Director Academic

Learning the Lingo

***Director* has a powerful set of features and is particularly good in its image manipulation and basic animation facilities. You can point and click your way around all the tools you need to create a basic interactive presentation, but the real power in *Director* is unleashed by its scripting language, called Lingo.**

The good news is that once you've mastered this language the possibilities are almost endless. Many top flight consumer multimedia CD-ROMs are the direct result of a little Lingo know-how. The bad news, however, is that it's extremely difficult to learn. Lingo is complex and full of inconsistencies, so don't even think about getting into it unless you're prepared to devote a few weeks or months of serious effort.

But while it's an uphill struggle, help is at hand. *Director Academic* comes with an armful of handbooks, one of which is devoted entirely to Lingo. You'll also find lots of top tips, examples and even complete projects on some of Macromedia's many related Web sites.

And once you've mastered all that, the final hurdle is X-Objects, which is a new breed of programming routines for *Director 4*, adding even more power. It's a never ending story.

goings-on. But, while the theatre stage analogy might sound simple enough, in practice things can quickly become extremely complicated, and that's before you even begin to learn the lingo (see the panel above).

By contrast, *Authorware Professional* takes a much more logical approach, based on a kind of flowchart with icons and a timeline. Basically, you drag icons which represent screens full of text or pictures, animated sequences, video clips, sound bites and so on, and slap them on to the timeline in the order you want them to happen. Once they're in place, you can fill them with all the various multimedia resources to hand and, unlike *Director*, everything is built into one tidy file (except for QuickTime video clips, which are called in as required). The clever bit comes with "interaction" or "decision" icons, which enable the user to follow different paths through the final production based on their input.

At the end of the day, *Director* offers more freedom and fluidity for the creative process, while *Authorware* is a little more formal and rigid, but, on the other hand, a lot easier to get to grips with. When it comes to sheer power, both programs excel.

The downside

If all this power at such a reasonable price seems just too good to be true, there's a good reason for that. The Academic editions of these products are actually cut-down versions of the originals, but it's less of a savage pruning and more of a gentle snip here and there.

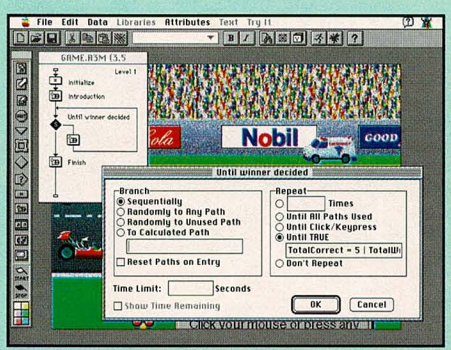
First, *Director*. In the complete edition you can grow your presentation beyond epic proportions to full blockbuster status, with a theoretically infinite number of actors or cast members (even though, as we mentioned, only 48 can be called up at any particular instant). In academia, you're limited to 100 cast members and, while the full version can have any number of frames (these are timing slots that define what cast members are called up at any one time), here you'll have to make do with 500. Just as with the full version, these frames are arranged in channels (these are parallel rows of frames for synchronising the actions of cast members), but, again, you're limited to 24, though this is more than enough for most purposes.

Similar restraints exist in *Authorware Academic*. Unlike the full Professional version, which enables projects built with unlimited icons placed on its flowlines, *Academic* has a 350 icon limit. In practice, you'd seldom use more than this in one project file anyway, rather using the **Jump Out** command to link smaller, more manageable files together. However, *Authorware Academic* lets you down here as well, because the **Jump Out** commands are excluded from this version of the program.

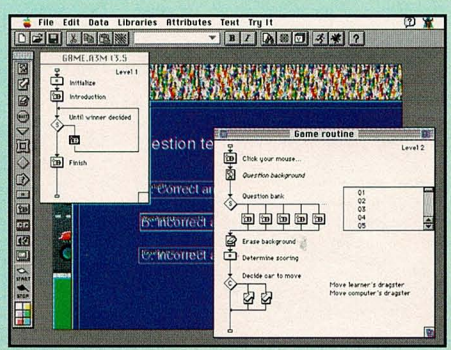
Still, you can make pretty enormous projects within these constraints if you plan with a little care, and the best ➤

Try out a save-disabled version of *Director 4.0*.

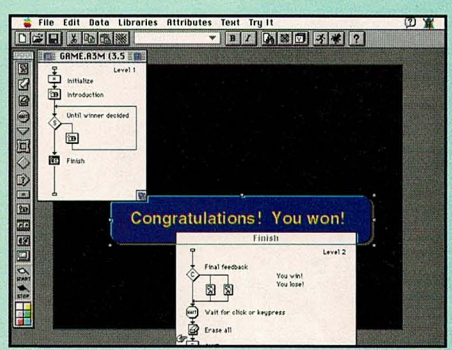
If you can get your head round the rather complex scripting language, *Director Academic* is a highly creative and powerful multimedia tool.



4 To save space on the flowline, we've placed all the introduction icons in a single Map window. The next step is to add the interaction – a horizontal branch forking right from the Sequence icon. The sequence control panel gives you all sorts of options to choose from.



5 At this stage things begin to get a bit more complicated. Further loops and sequences within the highlighted Map icon are arranged to provide the series of questions and answers and move the cars forward accordingly, until the winner is eventually decided.



6 Simple animation techniques built into the program enable you to move the cars along the screen. Another set of decisions in the Finish map icon decides whether you won or lost and displays a message accordingly. Okay, so where's the well-earned champagne?

news is that, unlike the 50-icon trial version of *Authorware Professional 3.0* on our cover CD, this cut-down edition of version 3.5 includes the **Packaging** utility, so you can create your own stand-alone productions and distribute them royalty-free. You can also do this with *Director Academic*, but, as with the full *Director 4.0* program it's based on, you must include a "Made with Macromedia *Director*" credit.

The bottom line

Both of these programs have immense power and offer an ideal introduction to professional multimedia publishing at a stunningly good price. As if that wasn't enough, you also get the full, extensive manuals that come with the full products, as well as some extra media libraries and ready-made projects put together by existing students and professionals. This is a great bonus, because taking them apart is a great way of discovering how the programs really work. MACFORMAT has no hesitation in recommending either of these products. In fact, we're thinking of setting up a summer school to see if we can qualify to buy in a few copies for ourselves.

MACFORMAT Classic

Authorware Academic

Icon-based multimedia creation at its finest, this power-packed CBT program is ideally suited to lecturers as well as students.

Features 92%
Ease of use 88%
Documentation 92%
Value for money 98%

MF rating 95%

Director Academic

De-facto standard for multimedia creation. Powerful and versatile, but complex, specially with its Lingo scripting language.

Features 95%
Ease of use 79%
Documentation 95%
Value for money 98%

MF rating 95%

Delivery media

The big headache with DIY multimedia is how to deliver or circulate it once it's finished. Forget stacks of floppies or the Web – the best solution is a CD writer. The soon-to-be-replaced Pinnacle RCD 1000 is arguably top value at the moment at under £1,000. Phone 01256 782 566.

Also out...

Prentice Hall has three other student-orientated packages, each of which is a more affordable version of its original incarnation.

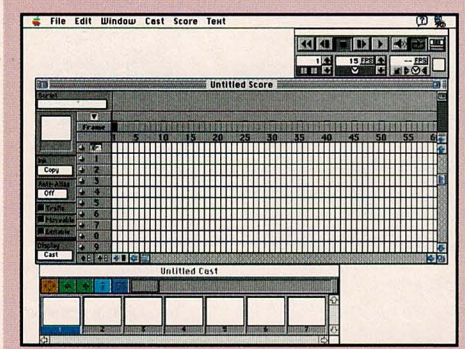
***The Student Edition of Matlab* (version 4) is a problem-solving and visualisation package. At £33.50, it's aimed at students studying engineering, science and maths.**

Those who have mastered *Matlab* might want to try *The Student Edition of Simulink*, which needs the former to run. Also priced at £33.50, *Simulink* enables you to build models from scratch and create simulations of real-world dynamic systems. This program relates more specifically to control engineering.

If, on the other hand, you need a graphical programming language for developing automated instrumentation systems (someone might), *LabVIEW Student Edition* is undoubtedly a snip at £26.40.

Directing the show

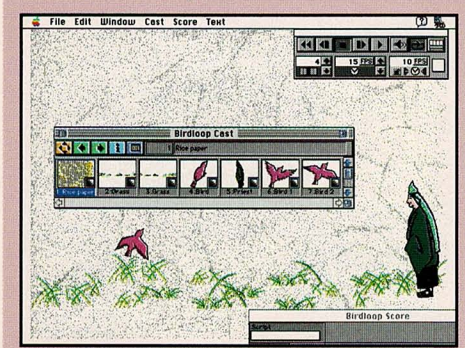
Here are the rudiments of putting together an interactive multimedia production in *Director Academic*.



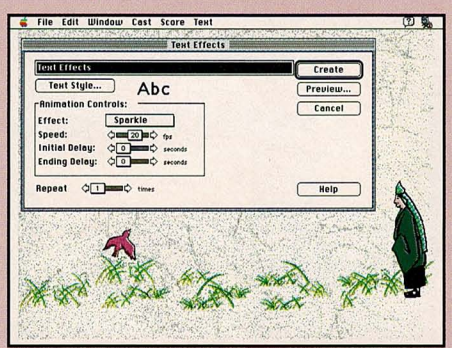
1 Start a new project and this is what you get – an obviously empty collection of score windows (in the middle) with their horizontal channels of frames, an as yet empty cast window to be filled with "actor" hopefuls, and the overall control panel (top right of the screen).

2 One of the most effective ways to get to grips with the program is to open an existing "movie" and see how it's put together. A movie is a finished production, complete with all the graphics, animation, text and so on, not forgetting the all-important interaction.

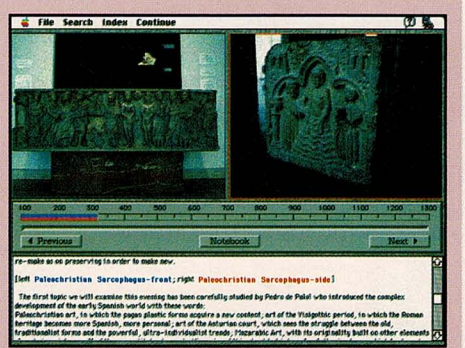
3 Double-clicking one of the so-called actors in the cast window will open it up with the appropriate built-in editing tool. *Director Academic's* image manipulation features are good enough for most jobs, but unfortunately don't suffice if you need to create a picture from scratch.



4 The program enables you to build fairly simple animated sequences, such as this bird in flight, by using a series of cut-out frames with the background set to transparent, and then overlaying them on to another picture. Of course, you can import QuickTime video clips too.



5 For animating banners and moving text or images around the screen, *Director Academic* has all the tools you'd expect to find, plus all manner of special transition effects for cutting from one frame to the next. In addition there's a built-in sound recording facility.



6 Once you've put everything together, it's time to raise the curtain on the "stage" window and interact with your new creation. *Director Academic* includes ready-made samples from students – this one's from the Latin American Studies department of Virginia University.

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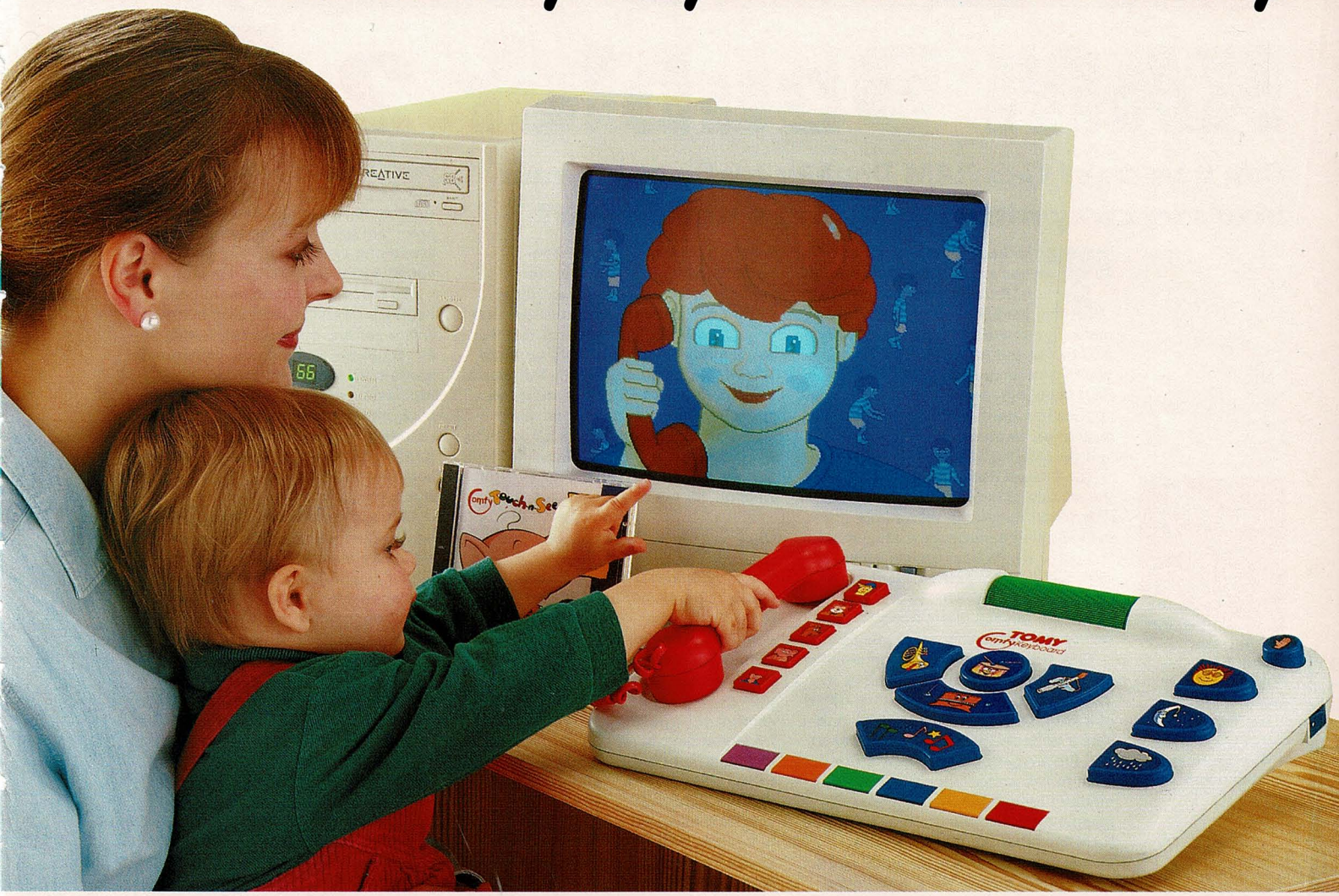

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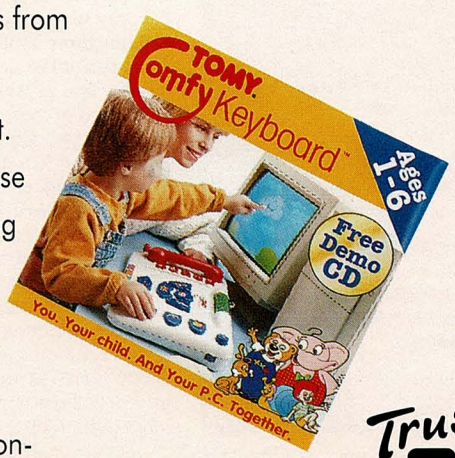

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RAM Doubler 2

MACFORMAT Classic

Can it be true? Can *RAM Doubler* really treble your Mac's memory without the aid of a screwdriver?

The hottest Mac utility has had an upgrade – version 2.0 of *RAM Doubler* now promises not just to double your Mac's memory, but *treble* it. New for version 2.0 is a Control Panel which enables you to control the amount of memory *RAM Doubler* gives you. It also acts as an application monitor where you can see how much memory each application you are running takes up.

The Control Panel enables you to set the amount of memory you want via a slider control. You can set it to file mapping only (a memory management technique which frees up real RAM), or push the slider up to triple memory. By default, it's set to double your memory. Connectix reckons this is the optimum setting and won't slow down your Mac.

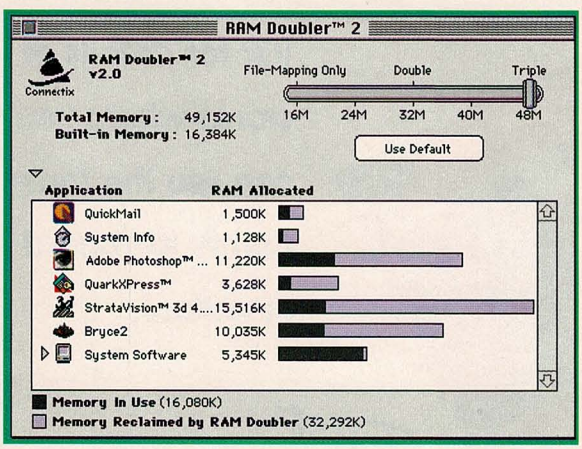
RAM Doubler expands your memory by up to three times, to a maximum of 256Mb. So, if you have more than 84Mb of RAM installed, *RAM Doubler* will only take it as far as 256Mb. The option to set it to file mapping only is handy if you want to run games that aren't virtual memory compatible. The improved file mapping will increase the amount of RAM available, but it won't enable virtual memory or slow the game down.

For games that do work with virtual memory but at the cost of speed, it's worth setting *RAM Doubler* to increase your memory by around 50%. This is enough to get the benefit of the file mapping and memory compression, but not necessarily enough for *RAM Doubler* to start using disk space as memory.

RAM Doubler works its miracles in three ways. First, it improves the memory management on your Mac to free up blocks of RAM that applications have reserved but aren't using. It reassigns these blocks to the total amount of free RAM available for running more programs. Secondly, it compresses information in memory that is used least. This works in a similar way to compression programs that compress files on your hard disk. When the data is needed, *RAM Doubler* decompresses it again. Lastly, it uses its own form of virtual memory, utilising the hard disk to store data that is not being used. So, *RAM Doubler* really does give you more RAM! Hold on, it's not as miraculous as all that.

Virtual memory

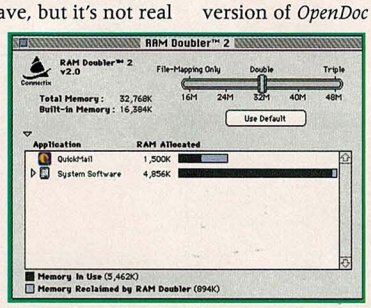
Macs based on 68030, 68040 or PowerPC processors running System 7.0 or later can use hard disk space as 'virtual' RAM. The feature is accessed via the **Memory** Control Panel. The only problem is that it slows your Mac to tortoise speed.



The Control Panel also shows you how much memory each program is taking up, and how much *RAM Doubler* has reclaimed from each application.

Too good to be true?

RAM Doubler can triple the amount of usable memory you have, but it's not real RAM. Connectix strongly recommends that you don't allocate more memory to a program than the amount of physical RAM you have in your Mac, otherwise things get very slow. This is because all programs have to have some real RAM to run in, not just 'virtual' RAM. If all of a program won't fit into physical memory, *RAM Doubler* has to store parts of its code on your hard disk in virtual memory. The result is that when these parts are needed, *RAM Doubler* has to swap data into real RAM from the hard disk and back again. Because hard disks are substantially slower to access than RAM, this slashes the speed at which the processor can retrieve the program's code from memory, making the program run very slowly. So even *RAM Doubler 2* just isn't practical for running bigger or more memory hungry applications, just for running more applications at once. The advantage is the time you save in quitting out and re-launching programs.



You can use *RAM Doubler 2's* Control Panel to set the amount of extra memory.

The utility comes with an extensive manual which explains how it all works, what to do when it doesn't and which Macs it's designed to work its miracles on. *RAM Doubler* is both 68K and PowerPC native, but it requires a Memory Management Unit (MMU) to run. The 68030, 68040 and PowerPC series processors all have MMUs built in and *RAM Doubler* will run on Macs based on these. It won't run on any Macs based on the 68000 or 68020 processors, which includes all the non-PowerPC compact Macs (Plus, Classic, Classic II, Colour Classic, SE, SE/30), the original Mac II and the LC. It also isn't interested in running on any of the above-mentioned Macs that have been upgraded using accelerator cards, even if the cards are 68030, 68040 or PowerPC based.

We tested *RAM Doubler* on the office 7200/75, a Power Computing PowerTower 180 and a IIci. All ran it without any problems, and the only reduction in speed, even when set to triple the installed memory, was when switching between programs. It took longer to redraw menus and tool palettes because *RAM Doubler* decompressed the program back into RAM, although the slowdown was fairly marginal.

The only problem we encountered was on the 7200 when *RAM Doubler* was first installed – it crashed as soon as the Finder loaded. Disabling a pre-release version of *OpenDoc* solved this. Note that we tried *RAM Doubler* with a beta release of *OpenDoc 1.1* and it ran without worries.

We used *Norton System Info* to test the speed of the PowerMac 7200/75 both with and without *RAM Doubler* installed. The 7200 had 16Mb of RAM installed and we set *RAM Doubler* to treble this to 48Mb of memory. To make the test as taxing as possible we launched *Photoshop 3.0.5, Strata StudioPro 1.75+, ClarisWorks 4.0, Nisus 3.4, QuarkXPress 3.3.1* and *PageMaker 6.0*, along with *Norton System Info*. Even when set to triple memory and running as many other memory hungry applications as it would allow, the 7200 was only marginally slower with *RAM Doubler* installed.

RAM Doubler is an excellent utility and a true time and money saver. However, considering the low price of real RAM at the moment, whether you opt for *RAM Doubler* or real RAM depends on how much RAM you've already got. Given that a 16Mb memory module costs about £75, you might want to pick up one of these first and *then* buy *RAM Doubler*. But do buy it.

LINDSAY BRUCE

RAM Doubler 2.0

As long as you have a modern Mac, *RAM Doubler* is such an essential utility you'll wonder how you coped without it.

Features	**92%**
Ease of use	**92%**
Documentation	**89%**
Value for money	**91%**

MF rating 92%

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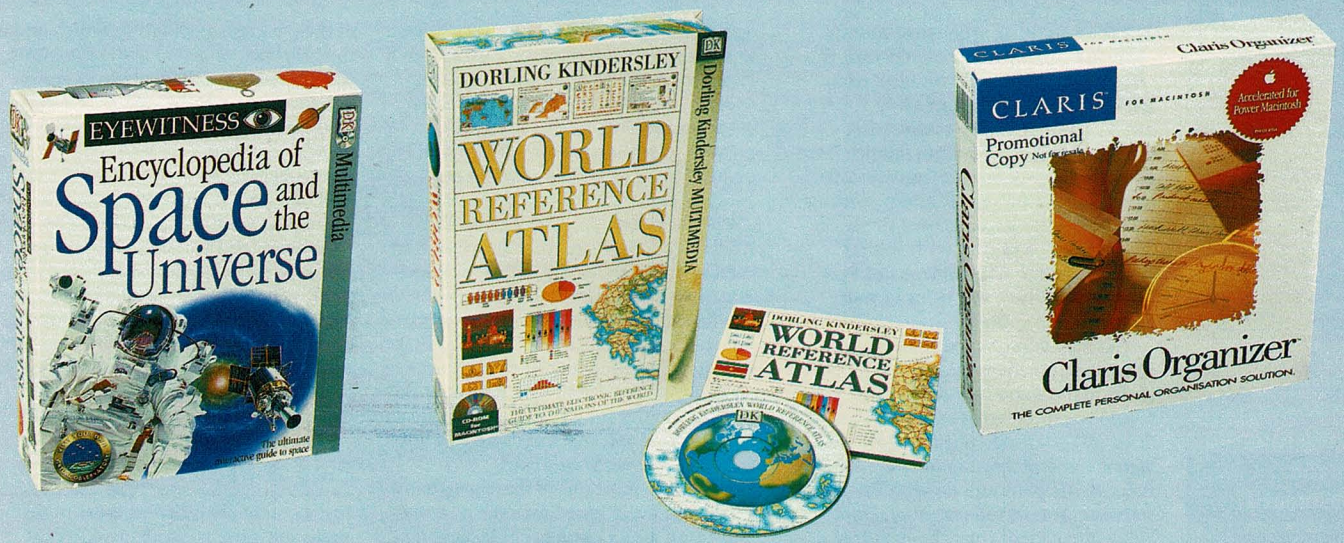

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All part of the process

Audio processing utilities? There are millions of them! In a new series, Ian Waugh looks at some unspeakable things you can do to your digital audio – and a few musical ones, too.

Pro Tools III

The industry flagship *Pro Tools* accepts TDM plug-in software. The *Pro Tools* Core System costs £7,130, while the shells you need to run the system start from £892. *Pro Tools* for the Audiomedia card costs £704. Contact Digidesign on 01753 653322 for details.

Sound Designer II

Sound Designer has its own variety of plug-in software and costs £445. Again, contact Digidesign on 01753 653322 for more details.

If you think whacking sounds through a multi-effects unit is fun, wait until you hear what digital audio processing software can do! Digital audio – converting sound into a form you can manipulate on your Mac – is now a firmly established part of the music and recording industry. After you discover the sheer flexibility of working with digital audio, the time will come – and very soon, too – when you want to start tweaking the sounds.

You may want to add reverb or chorus, adjust the tone and generally perform the same sort of functions which would require several external effects devices. You can do this and more with digital audio processing software. In fact, there's little you can't do with the right software, and its full potential is still being discovered. Over the next few issues, we'll be presenting a survey of the huge variety of specialist digital audio tools you can buy to support your present recording set-up on your Mac. Broken up into relevant sections, the survey will give you a better understanding of what's available and how it can help you.

It's only recently that Macs were given quality digital audio facilities, which have since been enhanced by the Digital Signal Processor capabilities of the PowerMac. (Before, only AV Macs had a DSP chip, designed specially to deal with digital media like video or audio.) If you don't own a Mac with built-in digital audio, you'll need to fit a digital audio card.

The most popular card is Digidesign's Audiomedia card, and the most common version currently in use is Type II, which fits into a NuBus slot. Digidesign has recently released the Audiomedia III, which is a PCI card. Note, however, that not all digital audio software is compatible with the PCI design, although no doubt all major programs will be made so in time. So check that anything you buy is compatible with your card.

To get the most out of these programs, you'll also need: an editor such as *SoundEdit 16;* an audio sequencer like *Deck II, Session 2* or the more upmarket *Sound Tools* and *Pro Tools* systems; a combined MIDI sequencer and digital audio recording program such as *Cubase Audio* or *Logic Audio;* or a program which combines video and audio, such as *Adobe Premiere.*

You can use the software covered in this series in conjunction with some or all of these programs. You can buy many of the packages as plug-ins, which add to the functions of digital audio programs. Once they're installed, plug-ins appear within a menu and work as if they are, to all intents and purposes, part of the original program.

This expandability is obviously good news for you. It means you can add features to your software according to your needs and you don't have to rely solely on those the program's designers think you want. The range of features available through plug-ins is enormous – everything from reverb and EQ to valve amp emulation. You'll even find a system that can generate sound samples with chaos theory mathematics!

Plug it in

Just as there are different types of digital audio software, so there are different types of plug-ins – one size does not fit all. The most common type of plug-in is for Digidesign's high-end *Pro Tools* system and it's called a TDM plug-in. TDM stands for Time Division Multiplexing, but don't worry about that – we'd bet there are even Digidesign personnel whose knowledge goes no further than the acronym! The TDM facility is built

Jargon Busters

Copy protection: many music programs use sophisticated forms of copy protection to prevent pirating. A hard disk install means you install the software onto your Mac from floppy disk, at which point a record of your installation is marked on a master floppy disk. No-one can then install further copies of your program using your master disks until you perform an un-install. The alternative form of protection is a dongle, a small device you have to fit onto your Mac, usually at the point between your mouse lead and the keyboard socket. The program won't work if this dongle isn't in place.

Filters: there are five main types of filter. Low Pass lets through low frequencies, and High Pass lets through high frequencies. Low Shelf and High Shelf filters are often used as tone controls and raise or lower a whole region of the spectrum. A High Shelf filter, for example, cuts and boosts the higher frequencies. Peak/Notch filters shape a selected area of the spectrum, enabling you to home in on specific frequencies, a little like a parametric equalisation.

NuBus: The type of expansion card found in the majority of older Macs, including the Quadra and the Mac II. It's now been succeeded by the faster PCI system.

PCI: Peripheral Component Interconnect is the expansion card standard used in the more recent PowerMacs – everything from the 7200 up – as well as all new Performas.

Phase error: Imagine you have a sound that is being reproduced in stereo. The separate parts are reproduced in the left and right speaker repsectively, combining in the air to create the sound. You may sometimes get a phase error, where your sound forms haven't been reproduced correctly and partially cancel each other out when they meet. The result is that part of the sound is missing. The bass range of a sound is the part that is usally most obviously affected by a phase error.

Q: In a filter, Q is the width of the frequency which is being modified. The narrower the frequency, the more you can home in on one particular band within a sound (useful for removing specific frequencies such as hum) and vice versa.

into *Pro Tools III* but a TDM upgrade is available for *Pro Tools II*.

The second type of plug-in is most commonly called *SDII*-compatible. Digidesign's *Sound Designer II* is a digital audio editor which comes with the Audiomedia sound card – the plug-ins appear in its **DSP** menu.

But Digidesign is not the only company which produces digital audio software. *Adobe Premiere* has attracted a large number of video plug-ins and, more recently, some audio plug-ins, too. Macromedia's recently-acquired *Deck II* is also compatible with *Premiere* plug-ins.

Macromedia's *SoundEdit 16* supports its own type of plug-in called Xtras, although there aren't too many of these around at the moment.

That's the current state of play in the plug-in department, but to add a touch more confusion to the situation, Steinberg's *Cubase VST* (reviewed in MACFORMAT 39) supports its own plug-in architecture. There are no other systems available, but that's bound to change.

There is also a range of software which does not require a host program and which runs on its own. Naturally enough, these are known as stand-alone programs. Several companies produce both plug-in and stand-alone versions of their software. In most cases the stand-alone version requires an Audiomedia card, so you may see it described as Audiomedia-compatible. However, do check that it is a true stand-alone version and does not require *SDII*.

Stand-alone software is obviously versatile, as it can process any compatible sound file so you can save the result and load it into any digital audio editor or sequencer. The advantage of a plug-in is that it fully integrates with the main program you're using.

We've selected some products for a more detailed review, so you can see the sort of features these types of programs have and how they perform under real-world conditions. However, it's good practice to try before you buy (many but not all companies have demo versions of their software), and to make sure you buy the software or plug-in which is compatible with your system.

Over the rest of the series, we'll look at programs that offer you a broad range of features in a convenient package, and some handy utilities for those one-off production tasks. But first, let's look at specialised tools offering specific help in three key areas – EQ, reverb and spatialisation (good name, eh?).

Premiere

Premiere is a video editing program, but its plug-ins offer powerful sound processing at just the time you need. *Premiere 4.2* costs around £445; contact Adobe on 0181 606 4000 for more details.

Equalisation

There are two Studio Sayings: (1) "You can fix it in the mix"; and (2) "You can't fix it in the mix". Which one you hear depends on which studio you're in. Both comments refer to making adjustments to the sound after it has been recorded. It's usually recognised that a better method of working is to get the sound right before recording. But if you can't do that, you can do an awful lot to correct any problems with the judicious use of equalisation.

Also commonly known as EQ, equalisation is a way of adjusting the tonal colour or timbre of a sound. First came treble and bass controls on a hi-fi, then manufacturers added a graphic equaliser – a module containing a row of sliders so you can cut or boost particular frequencies. The bass frequencies are to the left and the higher frequencies to the right.

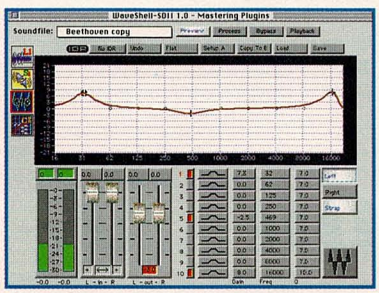
Around the same time synthesists were playing with parametric EQ, which enables you to select the exact frequency you want to cut or boost. Using today's software, it's relatively easy to produce multi-band parametric EQ so you can home in on a large number of frequencies with great precision.

Q10 Parametric EQ

TDM plug-in, £459
***SDII* or *Premiere* plug-in, £309**
Natural Audio

Plug-ins like *Q10* are published by Waves and use a WaveKey dongle, which plugs between your keyboard and the Mac itself (see "Copy protection" in the "Jargon Busters" box). It can be programmed to authorise several Waves products, saving the hassle of hard disk installs. The initial installation routine, however, is a little convoluted, although once all the files are in their correct place, the system works fine.

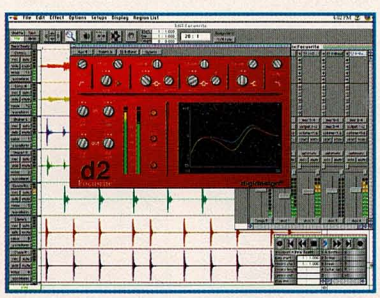
Q10 offers ten bands of EQ, each with four filter types – parametric, low shelf, high shelf, low pass and high pass. Frequency, gain (volume) and Q can be changed numerically by clicking and dragging on buttons or by dragging points directly on the graphic display of the filter. *Q10* can operate in mono or stereo mode and operation of the controls is quite intuitive.



Waves' *Q10* offers ten bands of extremely programmable EQ, all of which you control using a graphic interface.

In preview mode, the selected audio section loops while you fiddle with ideas, so you can hear what effect the changes are having. You can save and load any settings you make, and there are over 200 preset files – yes! – ready to load and go. These cover all the major EQ applications you can think of, and a few you probably can't. They include pseudo stereo effects, "super-notch" filters to remove unwanted noise, creative distortion effects and crossover set-ups which split a mono signal into two separate audio bands. There's so much here you may never even have to tweak a control.

Q10 can hold two different settings at once. Given the large number of presets, it would be useful if it could hold more, possibly accessed from a pop-up menu. But it's a small penalty to pay for a very flexible and powerful piece of software.



***Focusrite* has loads of knobs you can twiddle to set EQ parameters, as well as a useful graphic display.**

MF rating 88%

Focusrite d2

TDM plug-in, £880.08
Digidesign

Derived from the highly acclaimed *Red Range 2 Dual EQ*, designed by Rupert Neve, *Focusrite d2* provides multiple modular configurations working at 24-bit resolution. There are three different mono or stereo modules – six-band, four-band and dual/single band – and an EQ curve gives visual feedback of settings.

IQ Intelligent Equalizer

TDM plug-in, £822.50
Unity Audio

This is an interesting and unique EQ module which applies the tonal spectrum of a second recording to another one. It's a three-stage process. First, *IQ* analyses the source audio. Then it constructs a spectrum of the material to be processed. Finally, it designs a frequency curve algorithm which runs in real time and which can be inserted anywhere in the audio chain. *IQ* is PCI-compatible.

Sound resolutions

Sounds can be recorded in different resolutions, which give you differing amounts of detail when your track is played back. 16-bit sound recorded at 44KHz is broadly equivalent to audio CD quality.

Reverb

Reverb is the cornerstone of any effects set-up and is undoubtedly the most well-known effect. It can add ambience, depth and warmth to a sound, as well as clues to aid spatial perception.

The full mechanics of the reverb process are quite complex, involving many parameters. The more settings there are to twiddle, the more accurately you can produce different types of reverb – and the more knowledge you need about how reverb works in order to produce the result you want. Most systems come with many presets, so you can use them straight away without having to do any programming.

New Pro Tools

Pro Tools 4.0 is due before the end of the year, and will offer a new-look interface and automated use of TDM plug-ins among its many new features.

NuVerb

Stand-alone, £1,756.63
TDM plug-in upgrade, £374.83
Stirling Audio

Unlike the other products we're looking at here, the NuVerb is only available to buy as a hardware unit with extra software, hence the high price tag. The optional TDM interface offers direct connection to *Pro Tools* via the TDM bus. The system is produced by Lexicon, one of the foremost names in effects processing (reverb in particular) and is based on the Lexicon 300 and PCM-90. Effects algorithms include Random Hall, Random Ambience, Stereo Adjust, Rich Plate, Split Chamber, Dual Delay, Compressor and Small Stereo Adjust. There's a user-definable palette which gives you quick access to the five most frequently-used parameters.

TrueVerb

TDM plug-in, £599
Natural Audio

Using the standard Waves interface, *TrueVerb* enables you to simulate a vast range of reverb environments. Enter the size of a room in cubic meters and the program will simulate its acoustics. Although size alone does not dictate reverb characteristics, it's a neat feature. A frequency response graph shows the absorption factor of the environment and you can twiddle with other reverb parameters as much as you wish.

The program comes with a range of presets, available from a pop-up menu, and you can create and store your own, too. The manual includes chapters on reverb basics and applications.

D-Verb

TDM plug-in, £445.33
Digidesign

D-Verb offers professional-quality reverb and ambience for *Pro Tools* systems. You can process single or multiple tracks, and the user interface offers easy on-screen editing and enables you to save programs you create.

Spatialisation

For want of a better term, "spatialisation" refers to the placement of sound in the stereo image. Once upon a time, there were only monophonic recordings in which all the sounds came from one direction – the speaker. Then came stereo recording, in which individual sounds could be placed between two speakers producing a wide panorama of sound stretching from the left of the listener to the right.

Panning is the process of moving the sound around the stereo image in real time (the term "pan" comes from "panorama"). This can be very effective, particularly with electronic music. It would sound rather unnatural if you panned a piano left and right – it would sound as though the piano was being carried rapidly from one side of the stage to the other! Some spatialisation effects go a stage further, and create an enhanced stereo image in which the sound seems to come from an area wider than the speakers.

A more recent phenomenon is the creation of 3D spatialisation, where sounds can be placed not only to the left and right of the listener but also above, below and behind! This was leading-edge stuff a couple of years ago and required £20,000-worth of hardware. Now the facility is available from within software. Spatialisers are very useful for squeezing that last ounce of "bigness" out of a mix before you send it to be mastered.

Neeeowwwmm

The Doppler effect is most famously heard when you're passed by a car. Although within the car the engine pitch sounds exactly the same, the tone changes significantly as it moves from in front of you to behind you.

QX/SDII Stereo Soundfield Expander

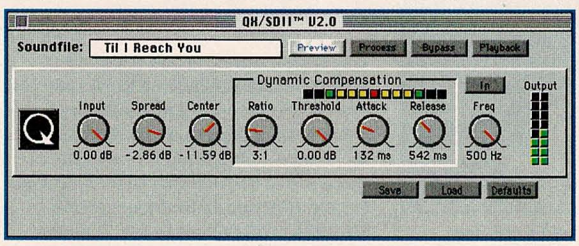
Stand-alone, £252.63
Mediaspec

As a company, QSound specialises in 3D audio. *QX/SDII* is designed to broaden the sonic canvas by increasing the perceived sound stage beyond the speakers. *QX/SDII* only works with stereo material and is designed for speaker listening. It is not effective with headphones, although it has no detrimental effect on recordings you listen to on headphones. The program is copy-protected with a hard disk install.

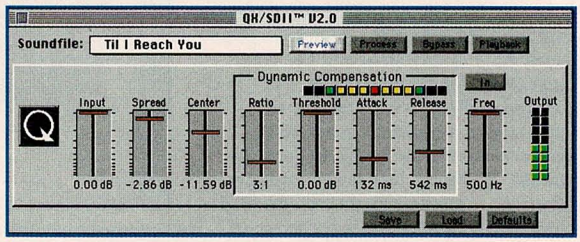
The controls can be displayed as either knobs or faders – nice! The **Spread** control sets the amount by which the sound elements are pushed to – or past – the edges of the stereo image. The further the elements in the original sound are panned hard left and right, the more the *Expander* will process them.

The **Centre** control determines how elements which are panned to the centre are affected. At one extreme they are passed through the system virtually unchanged (usually the most natural setting), while at the other extreme they are pushed outwards into the stereo field.

The dynamic compensation section



QSound's *QX/SDII* – placing stereo images where they have never been placed before, using 3D spatialisation tools.



The *QX* controls can also be shown as faders. It's flexibility like this that makes QX/SDII such a useful program to have.

***QX/TDM* is a sound field enhancement processor for *Pro Tools* TDM systems.**

provides increased enhancement during times when there is relatively little mono material in the mix. The controls are more akin to those on a dynamic processor than a spatial one, but it's easy enough to follow.

You can save and load presets but, alas, none is supplied. This is understandable, perhaps, as each recording will need individual settings, but even a few suggestions to get you started would have been a big help. Although it lacks the graphic display of Waves' *S1*, for example, *QX/SDII* performs similar functions (although there are pros and cons that exist for both systems) and it is one of the least expensive professional plug-ins available.

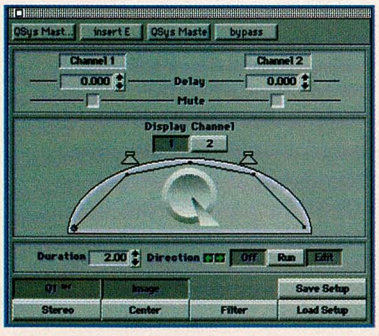
There's an alternative called *QX/TDM*, which obviously works with TDM systems rather than *Sound Designer II*. Note that *QX/TDM's* interface is different from its sister program's.

MF rating 82%

QSYS/TDM Virtual Audio Localization Processor

TDM plug-in, £834.25
Mediaspec

This is based on QSound's *QSystem II* multi-channel localisation processor, which has been used by artists such as Sting and Pink Floyd. It has four channels, which enable sounds to be panned in an expanded stereo sound field extending beyond the speakers. It features real-time mouse control of individual channel positions – just click and drag the sound position – and there are independent auto-panners on each channel, whose shape, rate and direction you can define.



***QSYS* uses a highly graphical interface to enable you to position sounds anywhere in a wide stereo sound field.**

Protron

TDM plug-in, £799
MusicLab

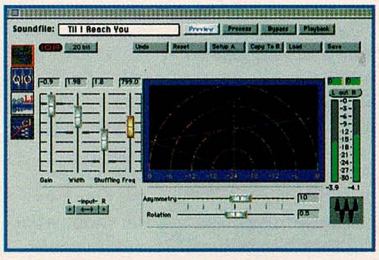
Protron is one of the first TDM products to offer 3D spatialisation. It has a graphic interface with the would-be listener's head drawn neatly in the middle of it. You can adjust the placement of the sounds to create a custom 3D acoustic space. There are controls for elevation, azimuth and distance. You can adjust direct and first-order sound reflections, and instigate a Doppler shift based on the placement of the source material. The program is also mono-compatible.

S1 Stereo Imager

TDM plug-in, £499
***SDII* or *Premiere* plug-in, £339**
Natural Audio

S1 has been designed to broaden and sweeten the spaciousness of the stereo image without colouring the original sound. The graphic display shows the centre, left and right positions of the processed stereo image and how loud they are.

You can move the stereo image beyond the normal range of the speakers for a truly expansive effect. A **Shuffling** control increases the stereo width of bass frequencies to compensate for the fact that our ears hear stereo effects as being narrower in the bass than the treble. It makes the image sound more spacious.



***S1 Stereo Imager* enables you to create a wide range of stereo enhancement effects on both mono and stereo material.**

As in other Waves plug-ins, correction is provided for phase errors and stereo channel reversal – two of the most common stereo imaging errors. *S1* performs a number of useful functions for tidying up messy stereo recordings and has enough scope to allow for creative stereo enhancement.

MF rating 82%

∑1 Surround Matrix Mixer

TDM plug-in, 2980 Marks (£1,295)
APB Tools

Don't ask me how to pronounce this – it's all Greek to me! *[It's actually sigma, the 18th letter of the Greek alphabet – Ed]* ∑1 enables you to record and play back the spatial movements for up to 16 sound sources within a virtual room, using your mouse. You can use 16 external inputs or 16 tracks in a *Pro Tools* system, moving each one around a 16 x 16 matrix. The process is particularly aimed at sound production for theatres, cinemas and the like. A PICT image of your room layout can be laid beneath the matrix, so you can position the sounds accurately.

PS22-StereoMaker

TDM plug-in, £TBA
***SDII* plug-in, £TBA**
Natural Audio

This takes a sound and spreads it across the stereo field, creating a range of stereo imaging effects including enhanced "beyond the speakers" effects. It works with both stereo and mono sounds, making it possible to give a stereo feel to a mono recording. **MF**

Next issue

MACFORMAT's digital processing series continues with multi-function software – programs that give you the individual features covered here in one convenient package. But does a multi-function program really offer good value? Find out in MACFORMAT 44.

The secrets of 3D sound

Spatialisation programs use a number of techniques to fool your brain into thinking you're hearing sound from different points in the room, rather than the stereo effect where the sound comes from a range defined by the position of your hi-fi speakers.

There are three settings you can use to position your sound accurately within a space. Imagine you are sitting at a point equally between your two speakers. The azimuth setting controls how far to the left or the right the sound is; elevation moves the sound up or down; and the distance control brings the sound toward you or moves it back.

In addition to this, you can take a reverb effect and tweak it using direct and first-order reflections. While you can think of an echo as one straightforward bouncing back of a sound off a surface, a reverb goes beyond that to give many repetitions which merge together. The difference is that reverb gives a more sustained effect. Reflection controls change the parameters of the reverb, enabling you to recreate various types of ambience, like a cave or a small, empty room.

Contacts

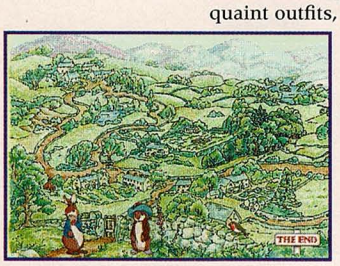
Name	Telephone	Fax
APB Tools	00 49 30 2627354	00 49 30 3913507
Digidesign	01753 653322	01753 654999
Mediaspec	013552 72500	013552 72202
MusicLab	0171 388 5392	
Natural Audio	0181 2071717	0181 2072727
Stirling Audio	0171 624 6000	0171 372 6370
Unity Audio	01920 822890	01920 822892

Multimedia Kids?

Convincing your children that education is fun might be a tall order when all they want to do is play computer games, but now there's a plethora of endearing titles which combine the two.

Peter Rabbit

PRICE	£29.99	**ON SALE**	Now	**CONTACT**	Mindscape on 01444 246333	**AGE RANGE**	Three to seven year olds
MAC	**Processor:** 68040 • **RAM:** 8Mb	**POWERMAC**	**Processor:** any	**REQUIRES**	**System:** 7.1 • **HD space:** 10Mb • **Colours:** 256 • **CD-ROM drive:** double-speed		



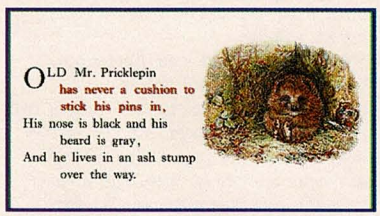
The beautifully illustrated contents screen. From here you can either play games or read the two stories.

The tales of Beatrix Potter are a British institution, if ever there was one. And with their beautifully illustrated, gently funny stories of furry or feathered animals in quaint outfits, a multimedia transformation was surely inevitable.

The Adventures of Peter Rabbit and Benjamin Bunny won't disappoint. Pitched at three to seven-year-olds, the presentation has all the charm of the books, but brings the romantic, watercoloured world to life with scenes that you can explore as you read the stories.

With a robin as your guide, you're presented with the opening screen of Peter Rabbit's world. Pass your pointer over the leafy picture of gardens and woods and up pop pictures representing the activities. You can go straight to these activities, which use images from the two stories in straightforward matching and puzzle games, or you can click on Peter Rabbit or Benjamin Bunny to hear and read their stories.

If you don't know *The Tale of Peter Rabbit*, naughty Peter wanders off to Farmer McGregor's garden one day, intending to feast on vegetables. Mr McGregor (who killed Peter's father and ate him in a pie) sees him and gives chase, but Peter escapes and only suffers the ill effects of hiding in a water-filled


OLD Mr. Pricklepin
has never a cushion to
stick his pins in,
His nose is black and his
beard is gray,
And he lives in an ash stump
over the way.

Click around the pictures that accompany the story and you'll come across various rhymes like this one about Mr Pricklepin.

can and eating too many radishes. He also loses his smart, new, blue jacket with brass buttons and his shoes.

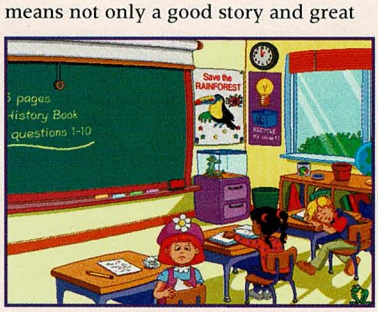
In the Options setting, you can choose exactly how your children are going to enjoy the stories – with an English or

The Lie

PRICE	£19.99	**ON SALE**	Now	**CONTACT**	ABLAC Learning Works on 01626 332233	**AGE RANGE**	Three to eight year olds
MAC	**Processor:** 68LC040 • **RAM:** 8Mb	**POWERMAC**	Not available	**REQUIRES**	**System:** 7.1 • **Colours:** 256 • **CD-ROM drive:** double-speed		

It looks a bit like Mr Blobby but it's green, cuter, inflicts the occasional song on those who'll listen and causes no end of trouble. The Lie, that is.

The magic of story-telling is perhaps most enchanting as a last treat before bedtime, a soothing end to the day. It's also the best possible incentive a child could have to want to learn to read – a gorgeous picture book and all those words unravelling an interesting tale. With all that to compete with, a CD-ROM needs to be equally fascinating to win over your child's attention. That means not only a good story and great pictures, but something to equal the interaction between parent and child.



The start of the story and the birth of the Lie. But who would do their homework before Sunday evening anyway?

In the tradition of *The Waltons*, this is a story with a wholesome moral message behind it – a modern-day American fable. Aside from that, *The Lie* is a fun story with catchy rhyming couplets and animation that your kids should love.

The format is simple: as the story is read to you (you have a choice of three narrators), you either turn the pages to keep up with the tale or pause first to jump into the pictures for a good snoop. The story is about Susie, who, faced with a ton of history to study, lies to her mum, telling her she has no homework for the weekend. As soon as she tells a lie, a little green creature appears – a physical manifestation of her fib that gets bigger and bigger as she keeps on lying.

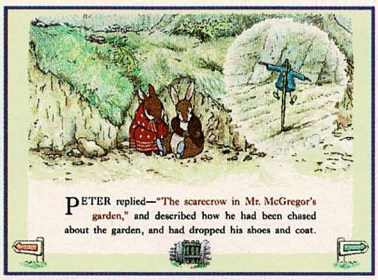
Jump into the pictures and you get further embellishments – the Lie sings a painful verse or two to Susie about what fun they'll have together and immediately sets about causing chaos. First, it messes up Susie's bedroom – you help her tidy it up by clicking and dragging

Susie can't sleep because of her noisy Lie – let's hope the Lie/conscience metaphor won't spoil the enjoyment of the tale.

toys, books and clothes on to shelves and into cupboards. Then, it flings videos all over a shop and you help Susie put them back on the shelves.

Together, you make phone calls to order flowers and pizza (without first getting permission), feed the animals at the zoo, mess around with food, create mayhem in the bathroom and throw popcorn to the Lie – all the activities are neatly incorporated into the tale.

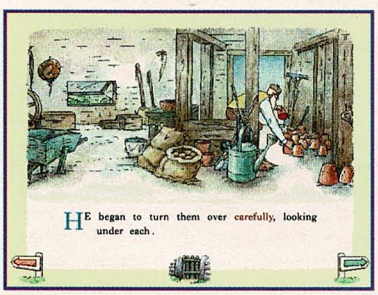
Help Mrs Rabbit make delicious lemonade for her thirsty children, and then you can print out the recipe for yourself.


PETER replied—"The scarecrow in Mr. McGregor's garden," and described how he had been chased about the garden, and had dropped his shoes and coat.

As Peter tells his sorry tale, foolhardy Benjamin decides that they must retrieve Peter's lovely blue jacket and shoes.

American narrator, with words or whole phrases highlighted as the story is read out, or without any narration at all. The words can also be clicked on throughout to access the glossary – this is extremely useful, with everything from plot to word definitions being covered.

As you go through the story, you can click all over the pictures. There are three main scenes to explore in *Peter Rabbit:* the family warren, the woods and Mr McGregor's garden. Each picture has red arrows which appear when you pass your mouse over the picture, so instead of being confined to the frame of the picture, you can explore the whole scene. It's as if you're stepping right into the story.



Mr McGregor looks for Peter in the tool shed. Peter, in case you're wondering, is in the watering can catching a cold.

And you won't just get animations as rewards for your investigative pointing and clicking – from time to time the characters say things to complement the plot, and sometimes pictures pop up with rhymes that are read aloud to you. The whole thing looks and sounds perfect.

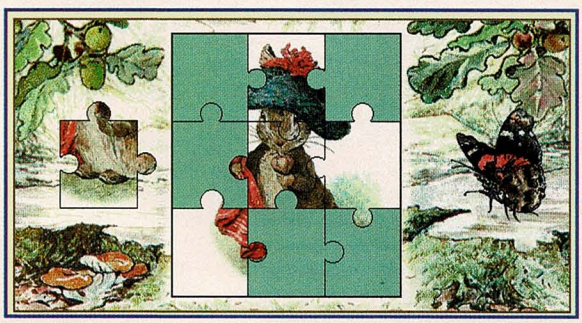
If *The Tale of Benjamin Bunny* was a Hollywood sequel, it would be called *Peter Rabbit II – The Rabbit's Return.* Benjamin happens upon Peter wrapped up in a handkerchief and looking very sorry for himself. Peter tells him of his mishap and Benjamin decides they should go back and get Peter's jacket and shoes, so off they go to Mr McGregor's garden. Some of the scenes you can explore are repeated from the first tale, but there are plenty of new and interesting things for your children to see, and the story is every bit as enjoyable as the first one.

A more satisfying rendition of these tales would be hard to imagine. The games are maybe a bit too easy (more suitable for three to five-year-olds than six or seven-year-olds), but the way you can explore the scenes of the story and the whole atmosphere of the disc are fun, imaginative and perfectly evocative of the books, if not a huge improvement on the original. **EVA LAUER**

Peter Rabbit

Seven-year-olds might find this a tad naive, but the charming atmosphere and beautiful illustrations make it a real winner.

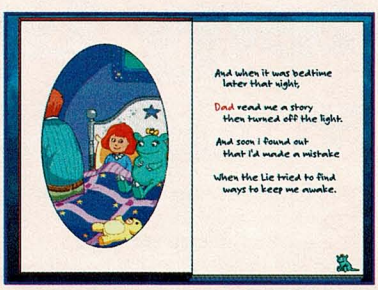
MF rating 88%



Put the jigsaw pieces in the right place to assemble this picture of Benjamin Bunny. It's a bit easy for most seven-year-olds, though.

It culminates with a birthday party where a pack of Lies threaten the fun. Can Susie take the pressure, or will she confess?

While Susie and her Lie torment the animals in the local zoo, you get to feed the tiger and the friendly, blue hippos.


And when it was bedtime later that night,
Dad read me a story then turned off the light.
And soon I found out that I'd made a mistake
When the Lie tried to find ways to keep me awake.

This is the basic format for the whole story. Click on the picture and you dive into a world of animations and games.

It may seem like Susie's having fun with her new friend (well, you certainly are), but as the plot progresses, she gets increasingly uneasy. The Lie is a representation of all the naughty things Susie does, so when the Lie trips up her friend at the park and Susie denies it, the Lie grows; when the Lie throws food at the dinner table and Susie denies it, the Lie grows; and when the Lie torments the animals at the zoo and Susie denies it to the zoo keeper, yes, the Lie gets even bigger. Eventually, the Lie is as big as a house and Susie just can't take the pressure any more – "I told a lie," she eventually cries.

As soon as Susie confesses, the Lie, of course, vanishes. Susie's conscience is at last clear, there's still time to do her homework and her parents have forgiven her because she's learnt her lesson, albeit the hard way. Cynicism and a few sickly songs aside, this is a fun and fully interactive story, which is blissfully easy for young children to use.

Click around the pictures and you can access various activities. In this one you get to throw popcorn to the hungry Lie.

Admittedly, you could buy three or four children's books for the same price, but at £19.99 *The Lie* is hardly going to break the bank. It provides a highly entertaining and endearing alternative to books which definitely beats shoving your kids in front of the telly when you're busy and, with those catchy rhyming couplets narrating the morally educational plot, it might even improve your children's reading skills. Good value and your kids will love it. **EVA LAUER**

The Lie

A lot of fun and more likely to sink in than a parental lecture on the importance of telling the truth, this is an entertaining title.

MF rating 80%

Magic tales

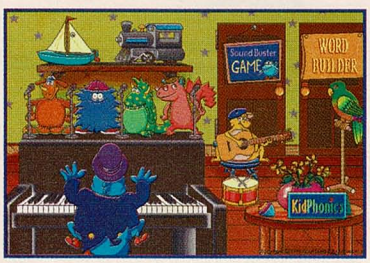
From the maker of *The Lie,* the *Magic Tales* series brings you traditional folk tales from around the world. We reviewed the £34.99 discs in MACFORMAT 34; contact ABLAC on 01626 332233 for more details.

Kid Phonics

PRICE	£34.99	**ON SALE**	Now	**CONTACT**	ABLAC Learning Works on 01626 332233	**AGE RANGE**	Four to seven year olds
MAC	**Processor:** 68020 • **RAM:** 4Mb	**POWERMAC**	**Processor:** any	**REQUIRES**	**System:** 7 • **Monitor:** 14 inch • **Colours:** 256• **CD drive:** double-speed recommended		

Most kids love songs, and *Kid Phonics* uses this in an original, refreshing way that the target age range of four to seven-year-olds should enjoy. Just as children can be taught basic arithmetic using sweets, fruit or other objects to help them visualise the numbers, *Kid Phonics* uses sound to make kids think about how words sound and ties this in with the method of learning to read.

The contents screen is a room full of musical instruments and cartoon creatures. Click on the creatures and they spring into action, each singing you a song as individual and amusing in style (from jazz, to rap, to country and western) as they are in appearance (brightly-coloured, lovable lizards and the like). Whereas most musical CD-ROMs are usually contrived and unbearably naff, *Kid Phonics* manages to get you in the mood for the ensuing activities.



Click on each of the cartoon characters to hear their songs and watch them get on down – prepare yourself for jazz, rap, rock as well as country and western.

What you actually get to do is fairly limited – you can either play the SoundBuster Game or try out the Word Builder. In the SoundBuster Game, you first hear a sound uttered by Schmooz, the jazz piano playing blue reptile, and then you have to match it up to one of the sounds you hear from four of the other cartoon creatures – this can be a single phonetic sound, the first or last syllable of a word, or part of a nursery rhyme. As you progress through the levels, your child has to identify words that rhyme, guess the last word of a nursery rhyme, decide which words don't rhyme and so on. It's a smart way of using music to make children think about words and syllables.

Every time you answer four questions, the middle of the screen is blasted away to reveal different objects – anything from a monkey to an egg or a basketball. The nouns are grouped into subjects – words from space, words from the farm, words from the toy store and so on. Next, you click on one of the objects and go to a word-building screen, where you spell the word of your choice and (with lots of help) construct a basic sentence – although, unfortunately, the results

The monster at the top makes a sound and you have to click on the others to find out which of them makes the same noise.

aren't always right and there's no kind of correction facility.

As a reward you can then colour in the picture of the noun, and you can even print it out with the sentence you've just constructed displayed underneath the picture – children seem to love using this option, so you'd be well advised to stock up on pieces of scrap A4 paper (or pretend the printer's broken!).

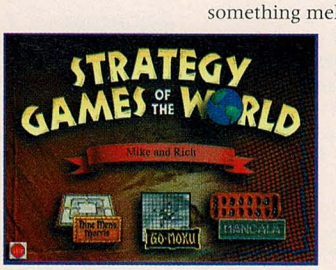
If you go straight to the Word Builder, you just choose a picture (all the vocabulary covered in the SoundBuster Game is represented), spell the noun by clicking on the letters displayed around the edge

Strategy Games

PRICE	£19.95	**ON SALE**	Now	**CONTACT**	Iona Software on 0181 296 9454	**AGE RANGE**	Eight to adult
MAC	**Processor:** 68020 • **RAM:** 8Mb	**POWERMAC**	**Processor:** any	**REQUIRES**	**System:** 7.0.1 • **Monitor:** 13 inch • **Colours:** 256 • **CD drive:** double-speed or faster		

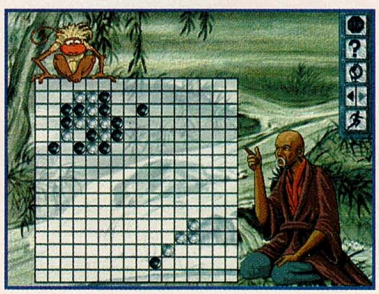
Stomach-churning 3D engine!" "Killer graphics with an eardrum-pummelling soundtrack!" "So real that you can actually smell the gore!"

Hands up anyone who actually understands any of the above? Well, quite a lot of people do, if the current thirst for Mac games is anything to go by. Of course, the odd bout of *Destroy All Space Nazis IV* is all well and good, but the mind often desires something different for its gaming fix. Something gentle, something mellow, something that doesn't involve nuking half a planet before you even get on the score-board... Something, perchance, like Edmark's *Strategy Games of the World.*



Three game options might not look too impressive, but there's a lot more to *Strategy Games of the World* than initially meets the eye.

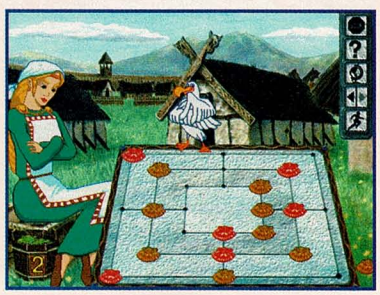
Three simple strategy games make up the package: *Nine Men's Morris, Mancala* and *Go-Moku*. Not exactly Battleships or even Noughts and Crosses but, by deliberately eschewing futuristic scenarios for



Okay, so the graphics might not look up to much, but the gameplay is what it's all about. Funny bloke, that Confucius...

ancient times, *Strategy Games of the World* reveals the origins of the board games that still make up the bulk of any self-respecting nipper's Christmas list by a mix of faithful reproduction, edutainment-style guides and, most importantly given today's computer-literate sprogs, extremely addictive gameplay.

The games themselves are both simple and seminal. *Nine Men's Morris* is a medieval Noughts and Crosses, *Mancala* is Backgammon for African nomads, and



Fair Viking maid or not, this somewhat addictive game of *Nine Men's Morris* belongs to us. No mercy and so on.

Go-Moku is Connect Four as played by the cast of *The Water Margin.* With each game at least 1,000 years old (*Nine Men's Morris* boards have even been discovered in the ruins of ancient Troy), the games come swathed in all manner of appropriate trappings. After a swift walk-through of the rules, Vikings, Masaai tribesmen and Japanese wise men are all queuing up as willing challengers. Move up a skill level and it's intricate beadwork, bonsai trees and wood carvings that now

As you progress from level to level, the challenges vary from identifying one single sound to guessing the last word of a nursery rhyme or deciding which word doesn't rhyme with the rest.

of the screen, make a sentence about the word as before and colour it in.

All of the exercises are carefully structured and easy to use, and the disc is so colourful and humorous that your child should genuinely learn something and have fun. The only limitation is the repetition of the basic formulae over and over – although the sounds vary, you only ever have to spell nouns and the sentence structure remains basic. While it's pitched at the right level for children who've only recently started to read, *Kid Phonics* won't be particularly testing for many seven-year-olds. Take away the flamboyant trappings, colourful and attractive though they are, and you're not getting that much for your money. **EVA LAUER**

Kid Phonics

More suited to children who have only just started to learn how to read, this is an amusing, brightly coloured and appealing musical fun-fest.

MF rating 73%

No mistakes

In the Word Builder you have to pick out the right spelling for your chosen object. When you've spelt the noun correctly, you then have to make a sentence. Unfortunately, if you don't select a grammatically correct combination of words there's no correction facility.

surround your every considered move.

Still want more background? Click the Game Guide to learn about the culture that spawned each game. Too young to care? There are some "Disney-esque" cartoon monkeys and seagulls on hand with American-voiced helpful hints. Want something a touch more educational? Click on the Strategy Videos to apply the skills you've learnt by finally winning a game of *Mancala* to everyday life. There really is something for every kind of inquisitive youngster here.

GOOOOALLLL!!! The blue light might indicate points scored in *Mancala*, but things definitely aren't looking too hot for AFC MACFORMAT at the moment.

And, beyond all the edutainment trappings, you have an (unfortunately rather thin) selection of games that you can pretend to let your child beat you with. Of course, getting this and not *Quake* to the top of your nipper's Christmas list will prove the hardest task of all. Maybe if you called it *Destroy All Space Nazis IV...* Okay, maybe not. **MIKE GOLDSMITH**

Games without frontiers

For those requiring a more authentic game of *Mancala*, take a safari to the foot of Mount Kilimanjaro, where you'll find the Masaai tribe still playing a variation of the game, called *Endodoi*. Honest.

Strategy Games of the World

Although this title could do with a few more games, the three on offer here are great fun and are accompanied by plenty of background material.

MF rating 81%

DK Multimedia

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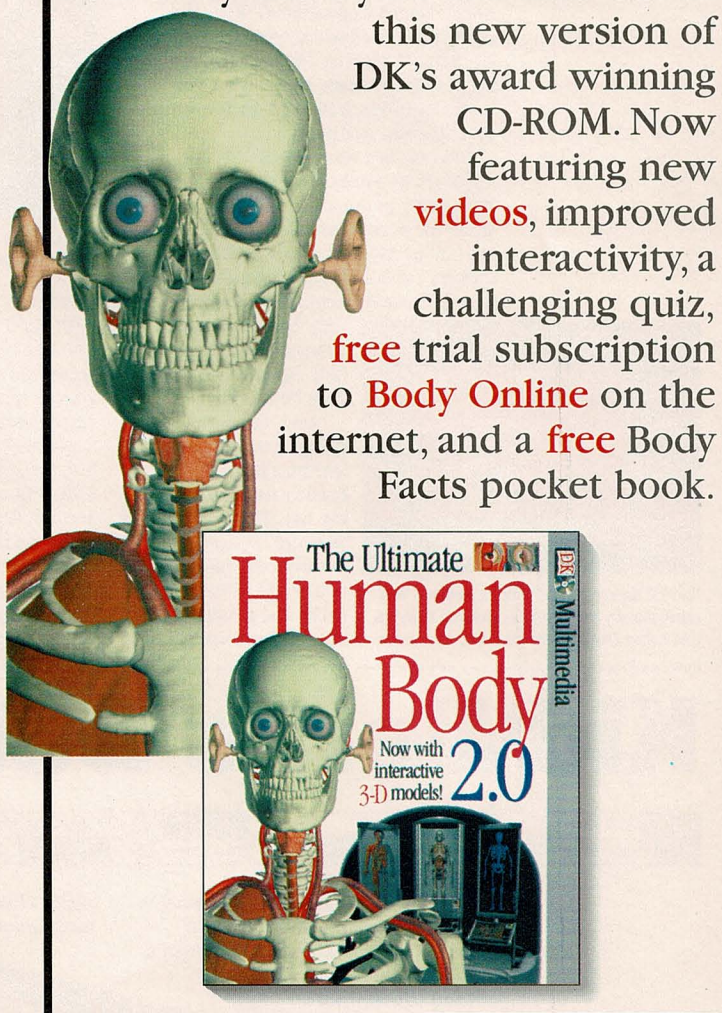

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I Can Do Magic!

PRICE	around £29	**ON SALE**	Now	**CONTACT**	IMSI on 0181 581 2000	**AGE RANGE**	Seven year olds and over
MAC	**Processor:** 68020 • **RAM:** 8Mb	**POWERMAC**	**Processor:** any	**REQUIRES**	**System:** 7.1 • **Monitor:** 13 inch • **Colours:** 256 • **CD-ROM drive:** double-speed		

The lights dim, the dry ice billows, the spooky synthesizer begins... So who's that on stage? David Copperfield? Your mad uncle with yet another card trick for Christmas? Debbie McGee? No, the dry ice gradually clears and... It's a Performa 630 Plus with a 15-inch multiple scan display. Brilliant!

Obvious fact time: CD-ROMs and magic tricks surely have absolutely no right being in the same post code, let alone the same sentence. Are we being too harsh? Maybe today's multimedia trickery can look up the magician's sleeve, show the aspiring trickster just what's needed to fool everyone and, heaven help us, produce the next Paul Daniels...

They'll never guess you've hidden the card inside the orange. Unless they've got *I Can Do Magic!* as well, of course.

And, drum roll please, *I Can Do Magic!* attempts just that. Freshly freed from the top hat, The Great Rabatini is your anthropomorphic guide to a world of magicians' tricks and magic history but, unfortunately, not that much else. The idea is simple: arm your child with a pile of coins and "25 dazzling tricks" will soon be part of the repertoire of your budding Houdini, and a guest spot on the *Royal Variety Show* surely beckons.

If it's all so mystical, how come it's all to do with grabbing my hard-earned cash?

No, it doesn't. Nicely rendered or not, The Great Rabatini is L!ve TV's news bunny in a tuxedo, his assistant is *Red Dwarf's* Kryten with an irony transplant and the actual tricks require more than a few ten pence pieces. They require cups. And glue. And cards and oranges. And... *I Can Do Magic!* may list on its packaging what's required for your Houdini "wannabe" to perform said tricks, but can you really imagine your child rapt in front of a monitor with a pile of small change and a Pritt Stick when he or she could be watching Penn and Teller's latest spectacular in awe? Exactly.

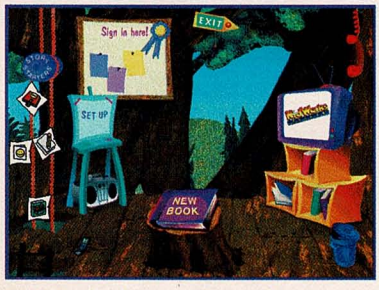
Click on the magic wand to conjure up a few rabbits from just a few pixels.

Admittedly, the various tricks at your disposal are explained step-by-step. Contained in an interface looking somewhat like a video recorder's, scissors float in mid-air and cards rip before your eyes, until, with the raise of The Great Rabatini's eyebrow and a bit of rewinding, the trick in question is finally mastered to perfection. Relief from this

KidWorks Deluxe

PRICE	£34.99	**ON SALE**	Now	**CONTACT**	ABLAC Learning Works on 01626 332233	**AGE RANGE**	Four to 14 year olds
MAC	**Processor:** 68030 • **RAM:** 8Mb	**POWERMAC**	**Processor:** any	**REQUIRES**	**System:** 7.0 • **Monitor:** 14 inch • **Colours:** 256 • **CD-ROM drive:** double-speed		

Whether it's talking elephants teaching subtraction or point-and-click storybooks stressing interactivity, the idea behind edutainment remains pretty much the same – to show that computers are fun to use and that a random mouse-click won't instantaneously wipe out all of Mummy's accounts. With titles now released with children as young as two in mind, the first stage of this technological revolution is now almost complete.



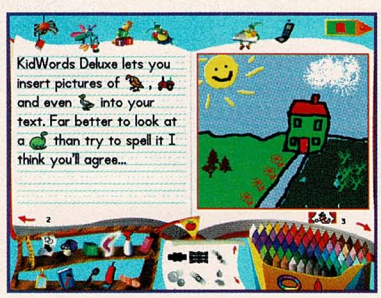
Click the books to conjure up dancing insects or use the mobile phone to contact Hummingway, your on-screen guide.

But, while simple learning games are fine, soon your child will encounter word processing and DTP, and Trunky the Elephant isn't going to be around to help then. Davidson has realised this and, with *KidWorks Deluxe*, moves edutainment to the next level by adding simple word processing to your child's ever-expanding range of computer skills.

The idea behind *KidWorks Deluxe* is thankfully simple. First, use what's worked well before. The point-and-click interface inherited from multimedia storybooks is user-friendliness personified, consequently *KidWorks* is set in a tree house packed with hidden surprises.

Once you're lured in, there's a bright red book in the centre of your screen just waiting to be clicked. Here is *KidWorks'* essence. Using the cartoon icons, use one page to write your story and the next to draw and colour your spaceship with Mummy inside. This is simple enough, but Davidson has added more than a few extras to spice things up a bit. A few simple mouse-clicks and before you know it tractors and even dinosaurs are added to your creation, either in the text or on to the drawing.

Need more? Explosions, giggles and all manner of sound effects can also be added to make your opus go with a bang. Nothing too special there but, with an admirable attention to detail, Davidson has added support for Apple's Text-to-Speech system, and a narrator will read your Magnum Opus while your proud parents proclaim your computer-assisted daubings infinitely better than Picasso's. The voices themselves aren't that far removed from the Speak and Spell machines now found in car-boot sales up


KidWords Deluxe lets you insert pictures of , and even into your text. Far better to look at a than try to spell it I think you'll agree...

Diaries were never this easy back in my day. You can use the Stickers option to add pictures to your stories.

Inflation, schminflation. Use the Coin Vanish trick to make your dad's money disappear!

tedium is supplied by the Magic Museum, which consists of news clippings, photographs and voice-overs documenting how the likes of Houdini make you look like the blithering amateur you know you are.

Unfortunately, by this time, Pritt Stick and orange peel are everywhere and you wish you hadn't shredded that ace of spades because a game of Snap would be eminently more interesting than this poorly-conceived, zillion-times-more-expensive-than-a-magic-book-and-an-Ali-Bongo-video CD-ROM is.

And that's not magic. **MIKE GOLDSMITH**

I Can Do Magic!

You can do much more interesting and fun things with a Pritt Stick and some fruit, but at least the tricks are explained in careful detail.

MF rating 55%

Behind the curtain...

Want to know how it's really done? The best way is to check out Penn and Teller's taboo-shattering performances, or visit their Web site at **http://www.sincity.com/**

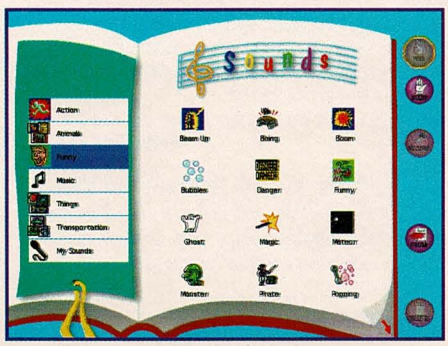
and down the country (and besides, *SimpleText* too will speak your text with the Text-to-Speech Extension installed), but that's hardly the point.

Davidson has used a few simple ingredients to create a product that is the essence of multimedia and relies much more on the creative imagination of the child than on sophisticated graphics to entertain and stimulate. *KidWorks* itself isn't going to win any prizes for innovation or design, but the highest recommendation is that, one day in the future, it could be your child who does so instead. Now that's what I call edutainment. **MIKE GOLDSMITH**

KidWorks Deluxe

An excellent package which encourages children to get involved in all aspects of story-making, and doesn't just rely on impressive graphics.

MF rating 88%



Add a few cartoon "boings" and "squiggles" to liven up that diary. Dickens would never have done it this way, you know.

Go global

On the Net? Click on the easel in the Bug House to set up your connection. Soon you'll be exchanging stories with fellow junior Shakespeares all over the world.

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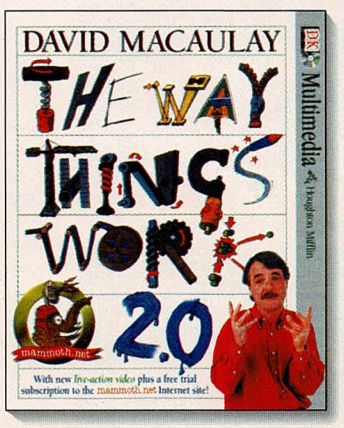
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The Lost Mind of Dr Brain

PRICE	£27.99	**ON SALE**	Now	**CONTACT**	Sierra on 01734 303322	**AGE RANGE**	12 year olds and over
MAC	**Processor:** 68040 • **RAM:** 8Mb	**POWERMAC**	**Processor:** any	**REQUIRES**	**System:** 7.1 • **Monitor:** 13 inch • **Colours:** 256 • **CD-ROM drive:** double-speed		

MACFORMAT Classic

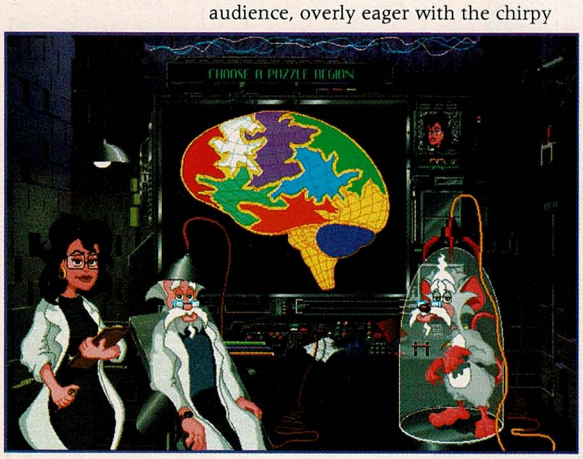
Give us a clue

Clicking on Dr Elaina in the game will give you hints, but subsequently makes the game harder. Your best bet is to cheat a bit and check the CD inlay sleeve for the hints beforehand!

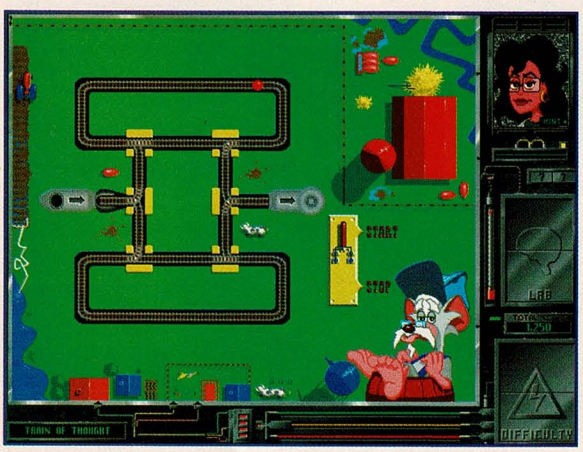
Of course, it serves him right. Animated antics or not, if Dr Brain is going to perform his heinous experiments on a poor, defenceless rodent, then the last thing he can expect is sympathy when the whole shebang blows up in his face... But, while condolences aren't exactly forthcoming, Sierra's latest puzzle-oriented edutainment title, in which you have to help Dr Brain to recoup his marbles, is undoubtedly one that's going to take up an increasing amount of your spare time.

Why? Well, the first reason goes by the name of Rathbone. Dr Brain's "faithful lab rat", Rathbone was the unwitting beneficiary of the brain-power that the Brain Drain machine sucked out of the good doctor's bonce, and he serves as your helpful guide throughout this multi-levelled game.

We'll come to the games themselves shortly, but for the sophisticated humour of Rathbone alone, Sierra deserves a hefty back-slap. Too often, children's software talks down to its intended audience, overly eager with the chirpy teddy bears when 'Johnny and Jenny' have been chortling at *Ren and Stimpy* or *Rugrats* all morning. But Rathbone is a delight to play and avoids the all-too-common patronising tone.

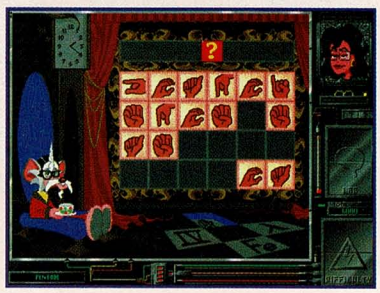


Back in the lab and, as you can see, Dr Brain's not looking too hot. Your job here is to fill that brain with his scattered marbles.



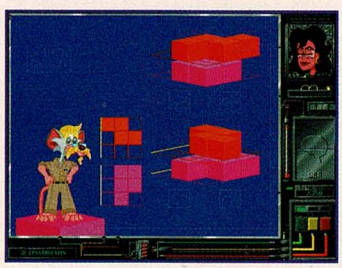
Now transformed into a rodent Casey Jones, Rathbone uses train tracks to illustrate your brain's different levels of consciousness.

To click, or not to click... Rotate the letters to get all of the words on the board so the hammy Rathbone can wax lyrical.



Possibly the trickiest game, Pentode gets your brain racing by matching symbols to Rathbone's clues. Nice jacket too.

Assuming different identities for each of the ten regions of the brain you must retrieve, Rathbone flits between Rod Serling languor and bonkers Gothic composer with ease – each guise is entertainment enough for adults and the intended over-12s audience alike.



Rubik's Cube, eat your heart out! Here you swivel the different levels to replicate Rathbone's building blocks.

But nestling underneath all the gags is serious intent. Narrated by Dr Elaina ("world-renowned neurosurgeon" and Dr Brain's "Scully from *The X-Files*" look-alike niece), the game requires you to flit around the regions of Dr Brain's cerebellum, complete each of the puzzles and finally enter Dreamland, the tenth and final area, where you can cure the doctor and complete the puzzle.

It's maze time with Rathbone barking insults at you like a true New York construction worker. I thought this game was meant to be good fun?

So ten puzzles and some rather cute animation is your lot? Not likely. Each of the puzzles is designed to tax various areas of your brain before retrieving Dr Brain's marbles and each one increases in difficulty as you try to achieve the 100% score necessary to complete the section. The Music Region requires musical and memory skills, File Sorting requires efficiency and logical thought, Synaptic Cleft somehow equates rodeo with electro-chemical reactions... With Rathbone along for the ride, each of the puzzles is fun to play but, with the humour easing through each game's educational slant, this is no condescending ride. Unfortunately. There's always another level to beat, always a fresh challenge thrown in to make your task that much more difficult and, while both games and sections can be saved and returned to at a later date, the overwhelming temptation to stay until you finish the damn thing is simply too great to resist.

And if you do manage to navigate what totals 1,000 puzzles and return Dr Brain to his scatty self? Well, then you're a better puzzle solver than I am. But, with three separate skill levels (novice, expert and Einstein) to choose from, *Dr Brain* is guaranteed to entertain and tax your own grey matter for a long time to come.

Sierra has not only taken the cultural maturity of its audience into account with Rathbone's stand-up routines, but also considered the fact that there might even be a few child prodigies out there. Such a rare display of forethought ensures that *The Lost Mind of Dr Brain* will still be gathering an enthusiastic audience when lesser releases are simply gathering dust on the shelves. And after that? Well, after that you should be able to build your own Brain Drain machine...

Just don't experiment on the rat.

MIKE GOLDSMITH

The Lost Mind of Dr B

Challenging, lots of fun and well suited to the intended age group, *Dr Brain* is addictive and has longevity. A great buy.

MF rating 92%

GH SOFTWARE SAVERS

Broderbund

SAVER 1

MYST

Surrealistic multimedia game that's a real adventure classic! Unravel a chilling tale of intrigue and injustice that defies all boundaries of time and space. Few are chosen. Fewer succeed. Journey now to an island world tinged with mystery... where every vibrant rock, scrap of paper and sound may hold vital clues!

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(Requires: Macintosh with, 256 Colours, 4Mb RAM, System 7.1 or later, CD ROM Drive)

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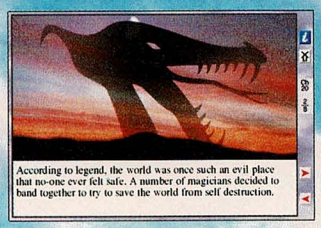
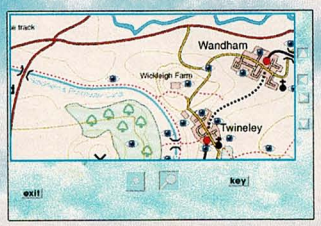
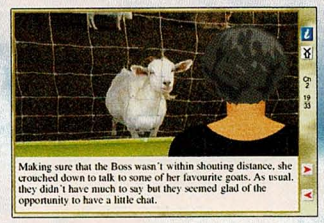
Rusty Dreamer


According to legend, the world was once such an evil place that no-one ever felt safe. A number of magicians decided to band together to try to save the world from self destruction.




Making sure that the Boss wasn't within shouting distance, she crouched down to talk to some of her favourite goats. As usual, they didn't have much to say but they seemed glad of the opportunity to have a little chat.

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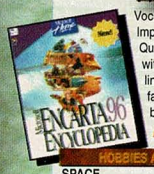

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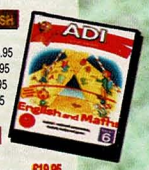

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MAC	**Processor:** 68030, 25MHz • **RAM:** 8Mb	**POWERMAC**	**Processor:** any • **RAM:** 8Mb	**REQUIRES**	**System:** 6.0.7 • **Screen:** 640x480 • **Colours:** 256		

SimIsle

Sun, sea, sand – happy, lazy days eating coconuts and drinking Malibu... If this is your idea of a small tropical island, think again as we take a visit to *SimIsle*.

Pitched somewhere between *Sim City* and *Sim Earth*, *SimIsle* enables you to take control of one of several small tropical islands. The game has a strong ecological theme – you can do pretty much whatever you like, but if you shave your island of trees and strip-mine it, be prepared to take the consequences. It would be a real shame to spoil some of the islands, though.

Maxis has opted for a 3D view, rather like that in *SimCity 2000*, for the main screens. Thick forests give way to lush grassland and, finally, to golden beaches, and shadows play across the land as the Sim sun moves around. You can also choose a 2D plan view with natural resources marked on it, so you'll know where to dig for oil or coal.

But you're not here just to sightsee, although if you keep your island clean and find enough interesting attractions, plenty of tourists will turn up to do just that. Your job is to manage the island, keep the population happy and maybe even turn a profit if you are lucky.

Resources are the key to this game. *SimIsle's* resources come in various forms, such as oil, coal, wood and labour, as well as the agents you use to perform tasks around the island. You can't actually do anything directly; instead you have to send one of your agents to do it for you.

Each agent has his or her own specialities. For instance, agents with construction skills are needed to oversee any building project and, remember, you won't be able to exert your will on your populace without a trained negotiator. Agents' CVs are available on-screen, so you soon learn who is suitable for what.

Even you have to answer to someone. Here are some suggestions from The Boss.

Having chosen the appropriate agents, click on the area you want them to visit, set them in motion and then just wait while they trundle off in their jeep. Deep jungle and other inaccessible areas can only be negotiated by agents with explorer skills, but the others can go almost anywhere you want them to. They can even swap their jeeps for rubber dinghies and take to the sea if necessary.

Some of the scenarios are quite light-hearted. Here you have to use alien visitors as a tourist attraction.

Once an agent has arrived, the first thing you'll discover is whether you've sent the right one. With the relevant agent in the right place, the option you need will be available, letting you build or add to sites, or simply change how that site's resources are used. Send the wrong one and the option will be greyed out.

Luckily, the game will let you know what skills or resources are needed before you can choose a course of action. Having to use agents to do anything can be frustrating, but it's another example of resource management.

The lack of direct control over your island is, no doubt, realistic. Your role is to determine policy, not to build things with your own fair hands. Most resources have a knock-on effect on the ecology. Getting mineral reserves out of the ground will cause all kinds of environmental problems. If you want the rest of the world to look favourably on your island, you'll have to learn to balance nature and industry.

Each agent has his or her own history, summarised in a little CV so that you can decide who to use for any given task.

There are a number of ready-made islands, each with its own scenario. It may be as simple as protecting an endangered species from poachers or making as much money as possible (and damn those ecological torpedoes), or as complex as developing an industrial base for your island or protecting your people from a drug baron (who has a habit of kidnapping your agents and mailing them back to you in instalments).

Maxis has had a lot of experience with this kind of game, and it shows in the graphics and presentation. *SimIsle* could do with speeding up a little, though. It often takes a couple of seconds to respond when a button is pressed. That apart, it's a good, solid, even educational game. It's never going to be a classic in the same way as *SimCity*, but it would make an excellent program for classroom use. As a way of whiling away the hours, though, it misses that special spark.

JIM CHANDLER

Many factors are important in *SimIsle* – world opinion, money and your population's quality of life all have to be taken into account.

SimIsle

A good idea with clean and pretty graphics, but having to work through agents all the time can be frustrating.

Graphics	**82%**
Sound	**71%**
Gameplay	**84%**
MF rating	**83%**

Clicking on most of the buildings will bring up a panel giving extra information and sometimes even a QuickTime clip.

Happy Families

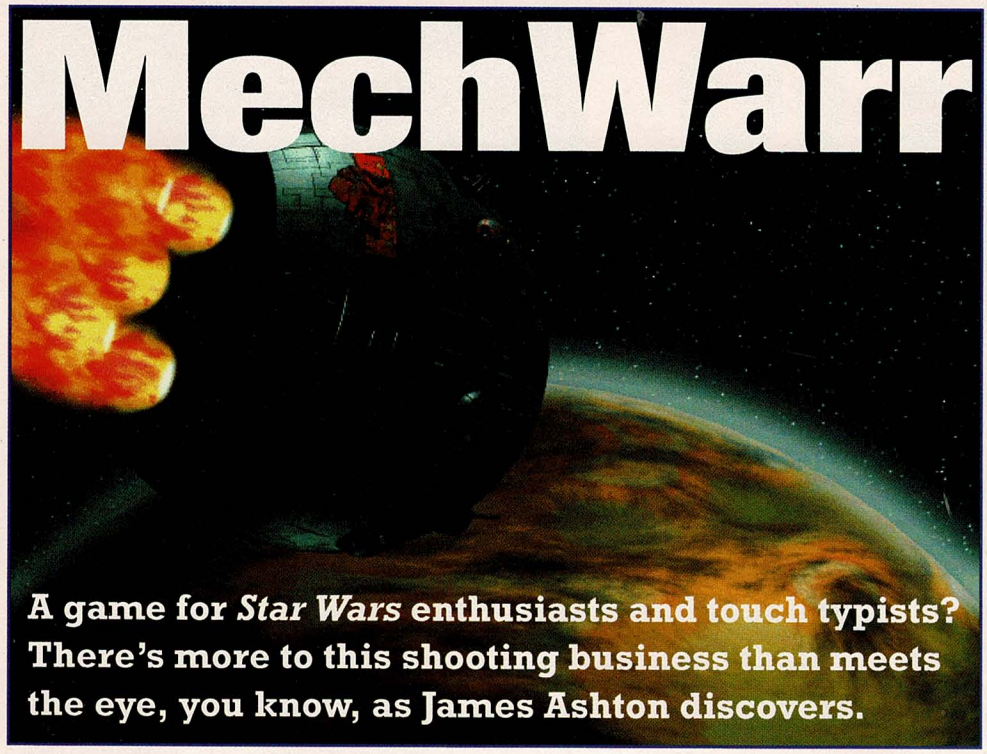
The *Sim* family also includes *SimAnt*, *SimCity*, *SimCity 2000*, *SimEarth*, *SimFarm* and *SimTown* – all available through Maxis as well.

Superlative sim

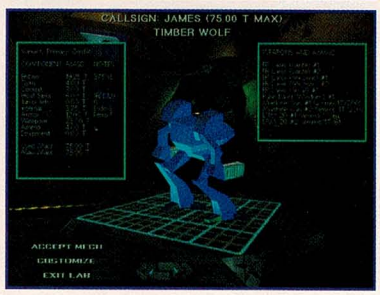
The best rated "Sim" games we've ever reviewed are *Civilization* and *SimCity 2000*. These both scored 95% in MACFORMAT 2 and 9 respectively. There's a demo of *Civilization* on this issue's Cover CD.

PRICE	£49.99	**ON SALE**	Now	**CONTACT**	Activision on 0181 742 9400	**WEB SITE**	http://www.activision.com/
MAC	PowerMac only	**POWERMAC**	**Processor:** 601, 66MHz • **RAM:** 11Mb	**REQUIRES**	**System:** 7.5.1 • **HD space:** 48Mb • **Screen:** 640x480		
• **Colours:** 256 • 2x speed CD-ROM drive • Sound Manager 3.1 (3.2 available on Cover CD)							

MechWarrior 2



A game for *Star Wars* enthusiasts and touch typists? There's more to this shooting business than meets the eye, you know, as James Ashton discovers.



First choose your clan (top) – there are three on offer and they determine which missions you'll play (above).

Why did dads enjoy the *Star Wars* trilogy? Was it for the storyline? No, but that helped. Was it for the special effects? No, the *Dr Who* generation wasn't so easily impressed. Was it for the thrill of seeing a man dressed up in brown shag-pile, running around grunting like an adenoidal German Shepherd? Not really.

No – *apart* from Princess Leia, dads liked *Star Wars* because of the sheer number of very cool new vehicles on offer. After packing three kids in the back of a T-Reg Escort and struggling through the traffic blocking the North Circular, the sight of a 50 foot, bipedal Scout Walker crushing, blasting and stamping on anything that got in its way was well worth the combined ticket-and-popcorn price alone. It's a recurring dream for many of them still. Stomp, stomp, crush – cut *me* up, would you...?

The designers of *MechWarrior 2* remember those Scout Walkers. (They probably had the model – easily the best in the range.) The game consists of using one of those fearsome machines (here called a Mech, but the basic pattern remains the same) to storm around on a selection of planet landscapes, duelling with enemy machines and trying to secure your set mission objectives. For anyone thinking that this sounds a little like the flag-collecting, tank-destroying *Spectre* (an all-time Macintosh classic), you have the beginnings of the right feel for the game.

However, where *Spectre* was a simple level-by-level shoot-'em-up, *MechWarrior 2* is much more of a structured sci-fi simulation affair. At the beginning of the game you're asked to swear allegiance to one of the three Mech clans that currently fight for domination of the galaxy. Once you're in (and once you have digested the clan's background story via a rather sumptuous rendered animation), you're left standing in the great clan hall. Here you can either opt for a spot of training (one of six missions designed to develop navigation, manoeuvrability, weapon accuracy and other important skills), view more of the clan's history or go straight out on your first mission.

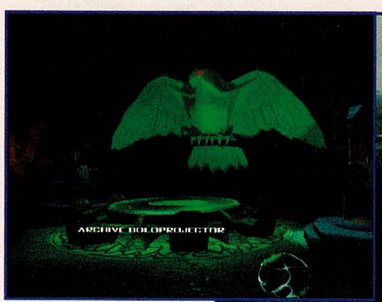
The clan you join determines the mission that you're sent on, although most revolve around the same themes. Your clan commander will set a number of key objectives that will have to be met for the mission to be counted as a success. These will often include destroying any enemy Mechs you find in the area, or one large target such as a communication base. On top of these primary objectives are secondary and tertiary objectives, which can include more Mech destruction as well as the elimination of other threats, such as deadly laser cannon emplacements.

If your mission is successful, you are awarded points based on a number of factors. You also get to view another, previously classified, piece of clan history. The overall aim of the game is to complete all the missions offered by your clan and build as high a score as possible.

The gameplay strength of *MechWarrior 2* is the mission-based system it uses. In games like *Spectre*, where the game objective was constantly fixed but the levels simply increased in difficulty, it

Power games

The PowerMac-only game will become all too common over the next couple of years. Games designers are making a wholesale switch to RISC chip technology because 3D animation requires an extraordinary amount of computing power.



The clan hall gives you access to the mission briefing room, the practice arena (essential for beginners) and the clan's individual archive file.

If the in-game graphics were as good as those in the intro, *MechWarrior 2* would be an all-time classic game.

MechWarrior 2's Head-Up Display

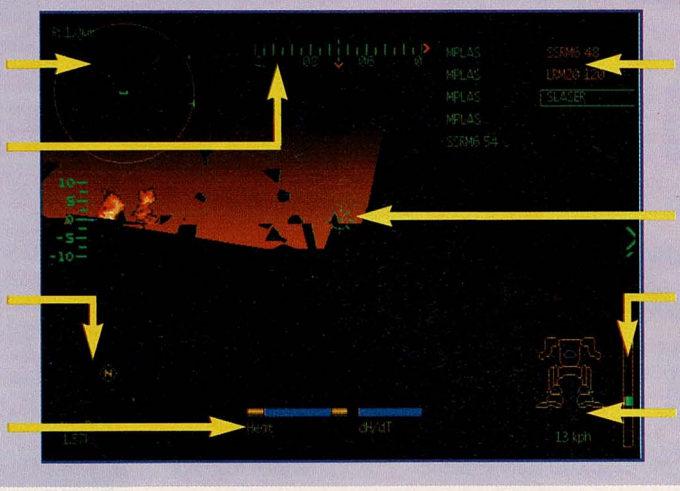
***MechWarrior 2* will appeal strongly to flight simulator enthusiasts. Although the Mech's basic control system is not as complicated as your average jet fighter's (no fiddling around with flap angles and thrust ratios here), the weapons systems, navigation, targetting, objectives, radar and status reports can soon start to confuse the novice. Here are some of *MechWarrior's* more important features:**

Radar: Shows your position relative to enemies and objectives.

Heading indicator: Shows which way your Mech is pointing

Targeting info and navigation: Indicates where you should be heading and what your next target's status is.

Heat monitors: If these show all red, your Mech will automatically shut down.



Weapons display: Shows which ones are available and which are currently selected.

Targeting reticule: Used to aim at your enemy. Turns red when an enemy is targetted.

Speed: Fairly self-explanatory, this one. Green for forward velocity, blue for reverse.

Multi-function display: Shows a damage report on your Mech.

was easy to become disenchanted with the whole idea and just a little bored. By subtly altering the skills you need to survive successive levels (and by including a depth of control way ahead of the left-right-forward-back-fire school of navigation), *MechWarrior 2* becomes a much more immersive game. Even when missions are completed for the first time, there is still an incentive to replay them, this time getting through while taking fewer hits or finding more of the secondary and tertiary targets.

However, *MechWarrior 2* is not a game with universal appeal (not like *Marathon* or *Doom II*, say). The smooth polygon-generated landscapes and enemies are far too dull for what is essentially a fantasy game. Considering this is a PowerMac-only title, it is doubly disappointing that there's been very little attempt made at inventive polygon shading or texturing.

Missile attacks are your most effective weapon, but your supply is limited and you'll have to be careful not to waste them.

You can view the game from inside your Mech, from outside and behind it, or from the way-above satellite view option.

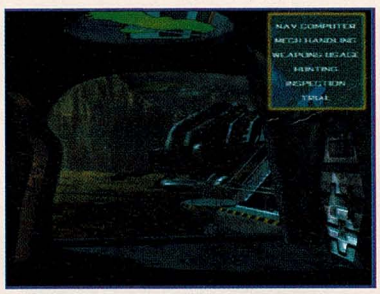
Another problem is *MechWarrior 2's* huge (and, in some cases, clumsy) control system. For instance, the Mechs have rotating head pieces on their bodies and the player should be able to swivel this head to the south-east, say, while the vehicle continues on a southerly bearing. However, the direction controls on the Mac's numeric keypad are so far away from the swivel commands (**[<]**, **[>]** and **[?]**) that your left hand has to leave its position guarding the Fire, Navigation and Targetting systems.

Similarly, the throttle control consists of using the buttons **[1]** to **[0]** as preset speeds. A simpler and more realistic system would have been to just use the **[+]** and **[-]** buttons and have a more intuitive analogue speed scale. Ideally, games should present a challenge only in their gameplay, not in their operation. *MechWarrior 2* doesn't pass this test with flying colours.

But despite its flaws, *MechWarrior 2* remains one of the best big-budget action games to be released for the Macintosh this year, easily surpassing the comparatively simplistic *Wing Commander IV*, for instance. It is a complicated game and requires a fairly concentrated effort for the player to become proficient. However, the inclusion of the training mode goes some way to make up for this and certainly heightens your sense of achievement when you've successfully completed your first deadly game of hide-and-seek.

Similarly, the three-clan system is an imaginative way of including lots of missions and making them appear different, while the tedious furniture of computer gaming (such as game saves, difficulty levels, even cheats) is all more than adequately catered for.

On a cold, hard, dispassionate level, it's hard to recommend *MechWarrior 2* universally – plenty of people want their entertainment simple and uncomplicated, and there's nothing wrong with that. However, once you've spent time with the game, you begin to worry that these people are missing out on one of the Macintosh's finer gaming moments.



***MechWarrior 2* gives the chance you've always wanted – to control one of those giant vehicles from the movies.**

Also, if you loved those Scout Walkers only *slightly* less than Princess Leia, it becomes even harder to turn down the chance to play it. **JAMES ASHTON**

MechWarrior 2

Its complexity is initally confusing, but *MechWarrior 2* is too addictive to let that worry you for long. Graphics smooth but bland. A great tactical shoot-'em-up.

Graphics	**81%**
Sound	**89%**
Gameplay	**89%**

MF rating 89%

Take control

There are over 50 different key commands in *MechWarrior 2*, and you'll need to understand all of them to complete the game. Activision has included a summary card to place in front of your keyboard, so that you can easily refer to a complete listing.

Hello, Mum! When your mission is complete, you must guide your Mech safely back to the welcoming arms of the Mother Ship.

PRICE	£19.99	**ON SALE**	Now	**CONTACT**	Maxis on 0171 505 1500
WEB SITE	http://www.maxis.com/				
MAC	**Processor:** 68030, 25MHz • **RAM:** 8Mb	**POWERMAC**	**Processor:** any • **RAM:** 8Mb		
REQUIRES	**System:** 7.0 • **HD space:** 26Mb • **Screen:** 640x480 • **Colours:** 256 • 2x CD-ROM drive				

Pinball 95

Of course you know how to play pinball. Everyone knows how to play pinball. Well, you might *think* you know...

Alternatively...

We'll review *Pro Pinball* in MACFORMAT 44. For more details contact Empire on 0181 343 7337. *Crystal Caliburn*, which scored 86% back in MF13, is now available as part of *Game of Fame*. Call Softline on 0181 401 1234.

It's 1982. Videogames are running rampant over the planet. Arcades spring out of nowhere and the sounds of electronic blipping, bonging and tweeting fill the air. The people in suits at Bally, Williams and the rest of the pinball manufacturers are nervously scanning the Appointments pages.

It's 1996. Videogames are out of breath. They need a sit-down and a can of Lucozade. The people at Bally and Williams are calculating their profit share. The number of game tables sold in the last year is up for the fourth year running. Pinball will live forever.

Whether it's the sturdy feeling of the table, the reassuring clunk of the electromagnetic flippers or the electronic pyrotechnology embedded in a very simple concept, pinball should have a special place in every game-player's heart. Which might be why videogame programmers keep trying to steal it for themselves.

***Pinball 95* gives you three tables to play on. "The Dragon's Keep" is the most spectacular, with features you find on all the best tables.**

Pinball 95 is the great game's latest appearance on the Mac and, like pinball classic *Crystal Caliburn*, it's not bad at what it does. (And before you ask: no, Maxis hasn't forgotten what year it is. *Pinball 95* is named after the operating system Windows 95 – there's a PC version of the game on the same disc.)

There are three tables on offer, representing a fairly good range of pinball's normal tricks and traps. There's a proper three-way nudge feature for those all important "bounce backs" and "slap saves" as well as the ever-hated "tilt" detector. The graphics are displayed at a good resolution (optimised for your Mac) and the developers have decided to show all the table at once, rather than attempting the often-bungled scroll up and down the screen.

Indeed, the only way *Pinball 95* lets itself down a little is that it doesn't offer anything like the sophistication of the rival *Pro Pinball's* isometric view, which generates a higher level of 3D on its single table. This leaves some of the raised features on all three of *Pinball 95's* tables looking quite flat and unrealistic.

Table one is "The Dragon's Keep" and is easily the best of the bunch. There are three flippers, a complex series of ramps and plenty of drop holes, ball locks, sampled sounds and complex missions. The second table, "Skulduggery", takes a pirate theme and includes a largely superfluous raised table at the back, four flippers and some cheesy nautical samples straight from the Dairylea triangle. The third table is "Space Cadet" and in comparison with the other two, that's exactly what it is. It first made its appearance as part of the Windows 95 starter pack, so wide open spaces, few working features and a lack of proper integration were only to be expected.

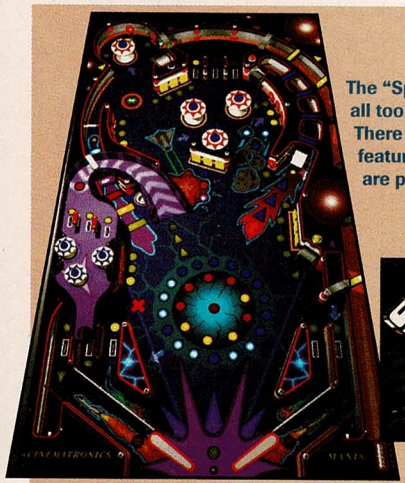
Pinball on a computer is never going to be as good as the real thing, but that doesn't necessarily make it useless or unenjoyable. Maxis has included a good set of hints and tips in the instruction manual, and this is helpful if you still believe that pinball is a game of chance.

However, computer pinball simply cries out for a training mode – maybe with superimposed arrows showing which targets you must hit for maximum scores. It would be a good opportunity to practise such exotic moves as flipper change-overs and backhands. If the ability to practise were included, perhaps pinball sims wouldn't feel like such poor substitutes for the real thing and you could then put them to proper use as training for your mesmerising pub, café and arcade performances. After all, high scores only count when you make them in public.

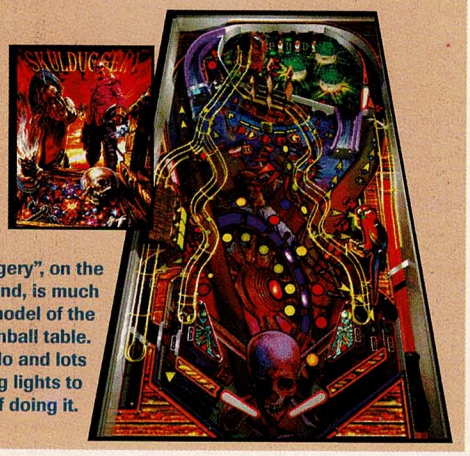
Dragons: you just can't keep them out of pinball games these days.

Pinball 95 won't disappoint you unless you're already serious about "real" pinball. While you might find *Pro Pinball* is more accomplished in its design and realisation, it offers only one table to *Pinball 95's* two-and-a-half – that's your choice. (Hey, a whole pinball review and *Tommy* didn't get a mention once!)

JAMES ASHTON



The "Space Cadet" table is all too appropriately named. There aren't many table features and the missions are pretty simplistic.



"Skulduggery", on the other hand, is much more the model of the modern pinball table. Loads to do and lots of flashing lights to put you off doing it.

Pinball 95

All the thrills that computer pinball can deliver. Smooth graphics and fair design make a good-value package.

Graphics	**79%**
Sound	**71%**
Gameplay	**73%**

MF rating 73%

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Descent: Levels of the World

As a main course, the 3D shoot-'em-up *Descent* was tasty and filling. But do you want the same thing for afters as well?

Let's say, for the sake of argument, that you liked the dizzying 3D shoot-'em-up action of *Descent* so much that you took the time to actually design your own levels. Now let's say that you thought they were so good, you sent them to an American magazine, which liked them. So a few months later, your level ends up on a commercial expansion disc, and people the world over applaud you for your genius. That twisty bit you designed with the trap at the end was just marvellous. Marvellous. In theory.

In fact, your level ends up being one of 100 extra levels for *Descent* on the Mac, and hardly anyone gets to see it, because the nice people who did the disc also very kindly picked out the ten best for the player, and these are the only ones anyone will ever play. Why should they play your rubbish level? Why indeed, and that's one of the problems with *Levels of the World:* too many levels, and very few that you'd actually want to play.

The chaps from Interplay, the disc's publisher, try their best to make it easy. There's a comprehensive list of the levels, and each has on-line author notes that give each one its own little plot. This is not very interesting: if there's one thing *Descent* doesn't need, it's a plot. You go in using a ship that can manoeuvre through 360 degrees, you find the core, you blow up the core and you haul yourself out of there before the whole thing blows up in your face.

Death comes often and quickly, revealing the more sadistic side of *Descent* fans. You will suffer at their hands with these levels.

Some of the rooms are simply huge. It's this use of open spaces which really makes the most of *Descent's* distinctive qualities.

The original

You will need the full version of *Descent* before you can play these extra levels. We reviewed *Descent* in MACFORMAT 34, where it received a creditable 87%. It's still on sale for around £40.

Not all the 100 new levels you get are grey and bland – there are a few bright spots. This is one of them.

It is a bit tricky, then, deciding which level to play first, unless you take the easy way out and choose one of the ten best. Of these, only three show any real innovation or imagination.

There's "The Corkscrew" for starters. This level has been designed around a central spiral that descends four floors down into the ground. At each floor, you can hop off and enter a sub-level. This works well because the doors to each floor are key-coded, and you must figure out the correct order before you progress. There are even a few hostages to rescue – one facet of the original *Descent* several of the novice designers missed out in many of the other levels.

"Ice's Outpost" works well because, as in "The Corkscrew", you're channelled in the right direction by the network of shafts and corridors. This leaves you free to explore and blast baddies while still finding your way to the core and out again, courtesy of three central shafts. This is when you feel that this level has been designed rather than cobbled together. Somebody obviously sat down and thought long and hard about how to keep you on the right track without feeling hemmed in.

"Ice's Outpost" is one of the better user-designed levels in the *Levels of the World* pack. All corridors lead to this central hub.

"In Square Out" is fun for two reasons: first, it begins with a small puzzle, and second, it has an enormous cavern with an entire wall of doors for you to blast. This exploits one of the unique qualities of *Descent* – the sense of scale, of being a very tiny ship in a very big mine.

Some of these levels are actually better than the 30 original tests you get with the full game, many of which were so sprawling that you had next to no chance of reaching an exit after shooting the core. But there simply aren't enough good levels to play, and without an overall objective to complete, it's hard to think of any compelling reason why you would want to spend any more than a few hours with this disc. Maybe you'd be better off waiting for *Descent 2*...

SIMON COX

There are plenty of switches to muck about with – more than in the original.

Levels of the World

This *Descent* add-on disc offers quantity rather than quality, but it'll keep you busy.

Graphics	**80%**
Sound	**79%**
Gameplay	**72%**

MF rating 75%

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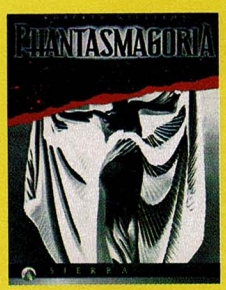

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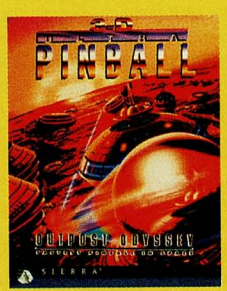

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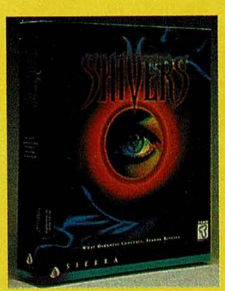

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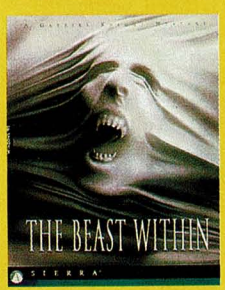

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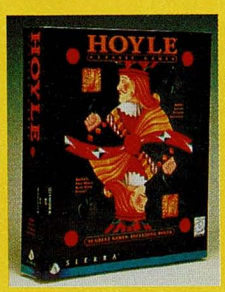

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Zork: Nemesis

Inter-linked animations make for an extended viewing environment and a tense atmosphere... if you can be bothered to wait, that is.

Who wants to live forever? How long can you make a pension last? Sid James nearly managed eternal life, looking like exactly the same wrinkled old prune from the age of 20 until he died at the age of 475, but he was alone in his success. Many others have tried – hence the ancient cult of alchemy: medieval scientists in search of the ultimate secret, a way to shake off the inevitable (taxes).

An odd-looking device, and a series of unlabelled levers. Not the first of these arrangements you'll come across.

Nemesis is a first-person point-and-click adventure game, in which you find yourself standing outside the temple, the first of three game stages, on the first of three CDs. Three CDs? Well, this is a game of linked stills and movies, with the animations interlaced to create a larger viewing area.

Cursed cursor

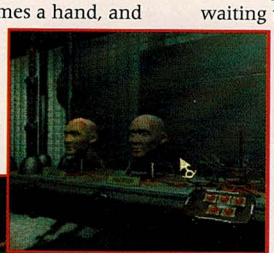
Your control over this environment is a roving mouse cursor, changing according to the various hotspots. At the left and right-hand edges of the screen it turns into a turning cursor, enabling you to pan through 360 degrees. When passed over an area you can explore further, it becomes a forward arrow. When passed over an object, it becomes a hand, and when passed over something you can touch (interact without taking), it just lights up. Sometimes.

The irritating thing about this system (apart from the fact that you have to navigate by moving jerkily from allowed area to allowed area, and the way in which you find yourself searching the screen for the sometimes way-too-small and illogically placed hotspots) is the way in which some vital interactive items don't show up, leaving it up to you to search non-hotspots for something important. This is largely due to bad game design, and can be lumped together with the same design that makes searching a wall full of drawers involve choosing a drawer, walking up to it, waiting ten seconds for an access, clicking on that drawer, waiting ten seconds for an access, watching said drawer slide open (empty), clicking it closed, waiting ten seconds, stepping back again, waiting ten seconds, then starting again on the next drawer... Yes, the whole system is very restrictive, and just a smidgen of thoughtful game design could have overcome this needless waiting.

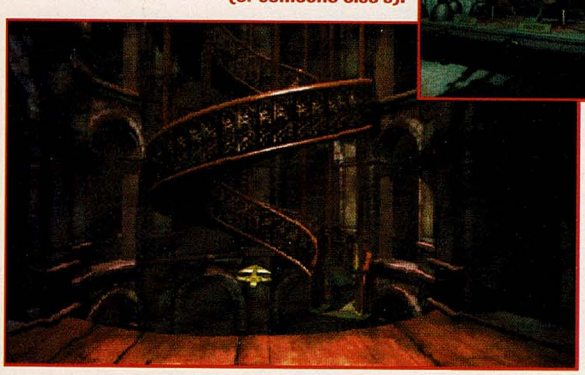
Yay! Finally – some nudity, and some violence (if you count the fact he's dead). Where's all this swearing then?

Hot tip

The hot and Hairy tip for *Zork Nemesis* is that the water-operated cellar doesn't do anything. I wasted an hour finding that out, though. Don't.



If you need the combination to the safe in the asylum, just use your head (or someone else's).



That faithful "forward" arrow points the way to a lever-operated staircase lift – you don't climb it, but instead pull the lever.

Where were we?

Standing outside the temple, wondering why we're bothering. The upside to this niggly, slow system is that this is a game with incredible atmosphere – you're wandering around (at first) a ruined temple, reviving four Hollywood "Oh, what was he in?" alchemists, and falling into the unfolding plot therein, all of which has beautifully drawn, moderately acted and well-animated sequences. The majority of the gameplay is in the form of puzzles – some simple and fairly obvious (reproducing tunes, Simon-like), some fantastically taxing (time travelling on the back of an hourglass – don't even ask!) and others that you accidentally solve without ever realising there was a problem (the mine cart ride). There's also plenty of well-written atmosphere along the way, from the books, manuscripts and notes you find, to the (sometimes rather grisly) flashbacks you unexpectedly encounter on various occasions.

If swords-and-sorcery isn't really your thing, worry not – *Nemesis* takes place in many different locations, some ancient and crumbling, some futuristic and metallic. The lack of any real goal or rigid plot adds to the sense of tension and adventure, as does the nudity, violence, gore and mild expletives (consider yourself warned). In all, y'see, this is quite a good adventure – well-written, plotted and empathised. It's just let down by the programming and obvious technological restrictions to the point of irritation. No, that isn't an excuse – it's a criticism of lack of content over presentation, coupled with a complete lack of foresight on the part of whoever sat down to create this game in the first place. **SIMON FORRESTER**

Zork: Nemesis

Some groovy puzzles, reasonable rewards, sadly let down by poor programming.

Graphics	**80%**
Sound	**75%**
Gameplay	**40%**

MF rating 55%

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★ ★ Compilations ★ ★

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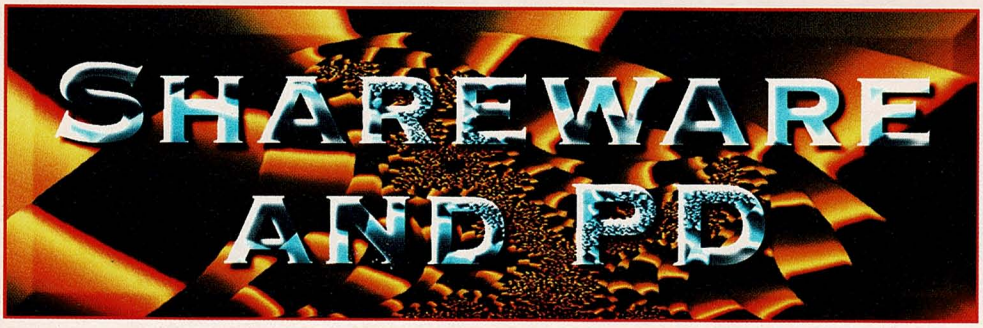


This month Derek Smith brings you software that can help you to understand foreigners, joust, go fishing, talk with your Mac and make it snow. No, really...

ON THE CD

Try out all of these programs on our Cover CD.

Isn't shareware brilliant? You can play games and everything. Mind you, some of the games you come across aren't very good. Or maybe it's just that I'm not very good at playing them.

Another thing that's brill are utilities. You can do all sorts of useful stuff with them. Not sure what, but aren't they great? Wow, and this month you can play dominoes! You can line them up neatly, then knock them down if you want to. It's dead boring if you don't knock them down, though.

And there's this program that can help you catch halibut. I always wondered where halibut came from. Brilliant! There's also this thing that finds viruses and then cleans them up. I don't know why anyone would want clean viruses. Maybe it's because of the halibut. In't shareware brilliant?

Margin notes

This month's margin notes are tips on how to write good, taken from *Poetry Ink* (see page 127).

Preposition

Prepositions are not words to end sentences with.

Infinitive

It is wrong to ever split an infinitive.

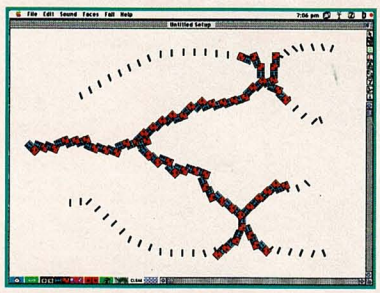
Real Domino Effect

Domino Simulator
Shareware $10

Who can forget watching Roy Castle on the *Record Breakers* show presenting the world record attempt at domino toppling? Alas, on one such occasion, after weeks of careful preparation, a particularly inquisitive pigeon made a rather close inspection of the implausibly long snake, and set a couple of million dominos toppling by accident.

I bet those students (and it was always students) wished they had stayed in their digs and played with this program. It enables you to set up your own winding road of dominos, then knock them down, time after time. Even better, it's guaranteed pigeon free.

If your domino setup doesn't work, you can quickly move them around, add another domino, or change the starting point. It all works very efficiently, but you can't help feeling there's something missing. Maybe it should have whizzo 3D graphics, maybe you should have little bridges and swings. No, that's not it. The problem is that the whole fun and excitement of domino toppling is that it *is* risky, difficult and a one-time affair. Rather like sex, really.



Nothing to do with an England cricketing tail-end collapse, *Real Domino Effect* is suitable if you have a tad too much spare time on your hands. And $10 to spend.

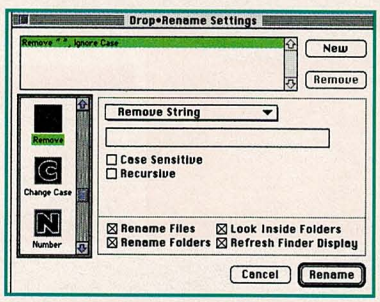
Drop Rename 2

Naming utility
Shareware $10

I'm sure there's been a time in your life when boredom has overcome you, and you'd love to drop everything, choose a new name and start life afresh. Alas, this utility won't help you with this little problem. But for a small percentage of people, this could be the solution you need to alleviate some of that boredom.

Take a group of files, drag them onto *Drop Rename*, and it will automatically rename them. Why? Well, let's say you have to rename a group of graphics ready for use in a Web page by adding the suffix ".gif". This software can rename dozens of such graphics in seconds.

The options are very flexible. You could drag a disparate bunch of files, delete their whole name and replace it with some chosen text, followed by a number that increments itself automatically with each file. This might not be of much use to you, but to some people it might just improve their quality of life to the extent that it prevents them tearing off their clothes and running into the sea. Well, you never know.



Need to change a group of file names? With *Drop Rename* you can batch rename files in seconds, saving you a tedious job.

X10 Scripting Commands

Home automation
Shareware $10

It's not often that I give magazine space to a product I haven't been able to test due to a lack of the appropriate hardware. I passed over the MIDI keyboard program that could manage a network, I had to leave the modem utility that promises you unlimited free Internet access, and I never even mentioned the cattle-milking interface that would bring a wry smile to any self-respecting farmer's face.

So why do I feel moved to talk about something that sounds so dull as *X10 Scripting Commands?* Well, *X10* is a standard for home automation. The idea is that you plug your home appliance – for instance the kettle – into a small box, which in turn plugs into the wall socket. A master unit then causes subtle variations in the electrical supply around your house, controlling and commanding all of your remote appliance units.

The master unit can then be attached to your Mac and you can control it using software. The upshot of this is that you can turn any appliance on or off using only your Mac. You could, for instance, program your Mac to turn on every light in the house if you hear a bump in the night and suspect a burglar. Or you could be woken by your radio on weekdays, but not at the weekend.

Still not impressed? If your Mac has a modem, you can access the control program remotely, using the Internet. The question has to be, do you really want your Mac controlling your home electricity supply? While it may have a certain novelty value, the danger of your Mac taking a dislike to you and attacking you with the waste disposal unit seems rather too great for my liking. I think, for the time being, the only digital control I use on my household appliances will come from my index finger.

Word Translator

Language translation
Demo

Now that we're firmly part of Europe, we share many European qualities – such as resenting our geographical neighbours. What we don't share is a common language. There have been several failed attempts at producing computer programs that can translate text from one language to another (see MACFORMAT 26). Unfortunately, they are being a little inaccurate, which understandable is, considering the idiosyncrasies that much languages are having.

Word Translator sets itself a much more realistic goal, and manages to score.

Open the program and type in a word to see the translation instantly. You can then copy and paste this into any application. You could say that it's no more useful than a bilingual dictionary, but it's extremely quick, and a lot more accurate than my feeble, mistake-ridden attempts to accurately copy French words out of a dictionary.

It's bilingual, so you can easily switch to the French/English dictionary, and finally discover exactly what it was that the tourist you just met called you.

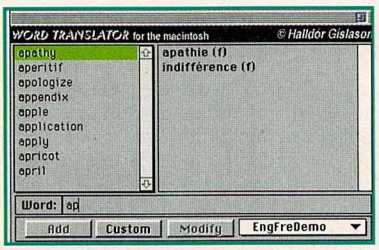
This is only a demo – you get the complete program, but only demo dictionaries. There is a huge range of language dictionaries you can buy, but averaging at $100 each, they do seem very overpriced for such a simple program. Still, if you're the type who writes offensive letters to foreigners, I guess you'll find it worth the price.

AgendaMaker v2.3

Personal organiser
Shareware $25

Why is it that the Mac market is currently only large enough to support one fully-fledged spreadsheet program – *Microsoft Excess* – yet it can cope with a veritable herd of personal organisers? If that wasn't bad enough, shareware authors are just as blinkered. There's only been one serious attempt at a shareware spreadsheet, *BiPlane*, which is now very old and doesn't work on the latest crop of Macs.

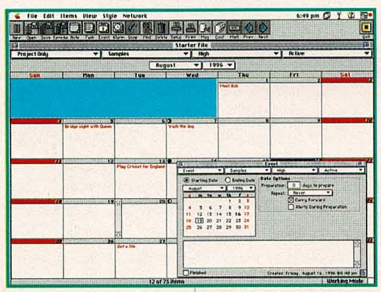
Instead, we have yet more personal organisers – just the same as all the commercial ones, only not as good. Don't get me wrong, *AgendaMaker* is a competent program with more features than, say, *Claris Organizer*. It also has the usual items such as appointments, tasks, notes and alarms. It's not suitable as a fully-fledged diary though, because you can only allocate items to individual days, rather than specific times.



I wonder if *Word Translator* knows what the French word for apathy is. I could easily find out. Then again, who cares?

One interestingly advanced feature is a basic mailing system for people on the same network. Type in your message, select the Mac you want to send it to, and away it goes in the desired direction – well, assuming the recipient in question is sat at his or her Mac. If their boss happens to be using that Mac instead, you'd better mind what you say.

The messaging side is certainly basic, but it's simple to use, and if you have need for such a system and don't want the cost and hassle of a full blown setup such as *QuickMail* or *FirstClass*, then it does the job well enough.



***AgendaMaker* will keep track of your life, and even comes with a sample agenda. Nice, but I'd prefer a sample life.**

So, will *AgendaMaker* pass the ultimate test and stay on my Mac? Sadly, no. Even though it's about £40 more expensive, I'm happy with *Claris Organizer*. It may not have quite so many features, but that's what I want – something simple, quick and efficient.

Now if the author of *AgendaMaker* was to turn his or her efforts towards creating a spreadsheet which doesn't install 23 Extensions, demand more memory than *Photoshop* or run as slowly as a British Olympian, I'd be only too pleased to cough up the shareware fee.

Exaggeration

Exaggeration is definitely a billion times worse than understatement.

Let's Go Fishing

Fishing game
Shareware $10

Fishing is probably the most popular participation sport in the country. That's if you can call sitting around on a river bank, occasionally waving a rod about, either participation or sport. This *HyperCard* stack captures all that maggot-ridden excitement and more in a black and white game.

You start with a trip to the bait shop to buy all your tackle and small live wiggly things. Then it's off to the lake side for a spot of fishing and a great deal of sitting. You watch your float bobbing around, and as soon as it noticeably dips, you click on the fisherman (or fisherwoman), to yank the line. If your reactions are quick enough, you'll get a bite, and with luck land a fish, although occasionally you'll get a boot instead. Exactly how a boot manages to rise to the surface of a deep lake and then bite your hook, which dangles just below the surface, is not fully explained.

Each time you land a fish you have less time to click next time. Once you ➤

Analogy

Analogies in writing are like feathers on a snake.

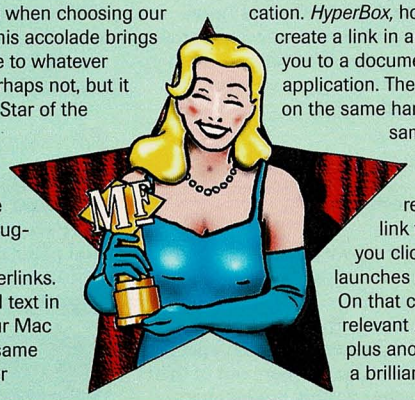
Metaphor

Even if a mixed metaphor sings, it should be derailed.

HyperBox

Hyperlinks
Shareware $39.95

We have to take special care when choosing our Star of the Month because this accolade brings world-wide fame and fortune to whatever program we select. Okay, perhaps not, but it is rare to award our coveted Star of the Month to a program that's buggy, but *HyperBox* is such a clever idea that I want it to succeed, and hope that the authors produce a bug-fixed version 2.



Star of the month

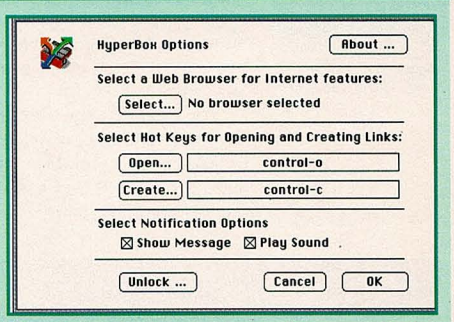
Many programs have hyperlinks. These are pieces of standard text in a document which make your Mac jump to another part of the same document or, indeed, another document altogether, when clicked on. You'll find them, for example, in *Adobe Acrobat* files. Also, with the advent of the World Wide Web, you're probably finding yourself increasingly used to clicking on blue underlined text and being whisked off to another site on the Web.

But up to now, these hyperlinks have always been links to documents produced in the same application. *HyperBox*, however, enables you to create a link in any document that will take you to a document written in any other application. The linked document can be on the same hard disk, elsewhere on the same network or any page on the Internet.

Imagine, you write a report in *WordPerfect* with a link to an *Excel* chart. When you click on the link, *Excel* launches and opens the document. On that chart there's a link to a relevant *FileMaker Pro* database, plus another link to a Web site. It's a brilliant idea and it takes just seconds to create a link. So it's a shame it doesn't quite work.

The first problem is that if the target application is already open, the target document opens in the background, so you often don't know it's happened. Second, unlike Web links, you can't be taken to a specific point of a document – say, half-way down. Third, you can't just click on a link, you have to highlight the text and then use a keyboard shortcut. Fourth, it doesn't seem to work with all applications, including – noticeably – *ClarisWorks*.

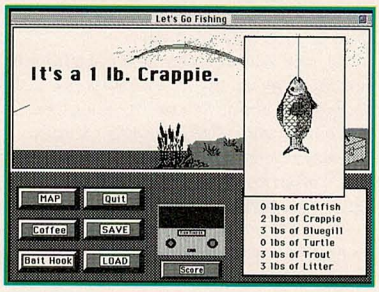
If the authors do fix these problems, they'll have a killer application that's well worth the £25 asking price. In the meantime, they've just given a lot of people a jolly good idea.



***HyperBox* will solve a major need that you didn't even realise you had until you checked out the Read Me file.**

Parenthesis

Parenthetical remarks (however relevant) are unnecessary.



How about that for a catch! I've just landed a 1lb crappie. I didn't realise *Let's Go Fishing* involved off-shore fishing.

have exhausted your limited bait, it's back to the fish market to sell some of your fish for cash, which you can then spend in the bait shop on more goodies and equipment.

You can only visit the shop three times, so once you finally run out of bait, your score is the total weight of fish that you have left at the end. It's not terribly exciting, but there's a whole hour of fun to be had. It's definitely not worth any shareware fee, so save your money and treat yourself to a couple of pounds of maggots instead.

Cliché

Avoid clichés like the plague. They are old hat.

Weather 2.1

Roleplaying assistance
Freeware

A few months ago, I cast aspersions against fantasy roleplay gamers, suggesting that they were very sad individuals. This upset and offended a lot of gamers. So I thought I'd do it again.

Weather is a random weather generator. You enter all the relevant climatic features of your fantasy world (and this program certainly allows for a lot of them), and it will then generate appropriate weather conditions for any day of the year you choose.

Comparison

Comparisons are as bad as clichés.

Serious gamers need this sort of data to decide exactly how the scenario will play. For instance, if there's snow or mud, you'll leave tracks that can be followed. Elves don't like the rain, and if there's either fog or high winds, dragons get grounded.

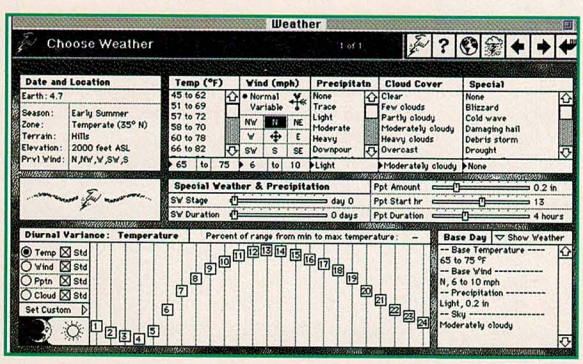
Generalisation

One should be sure never to generalise.

The weather is even more important to proper wargamers, where every factor is fastidiously taken into account to decide what will happen when two armies meet. If it is muddy, the troops will walk more slowly and the cannons will get bogged down. If it is warm and sunny, they will probably all go for a drink in the garden of the local pub.

Deciding all this manually can take a tedious amount of time and effort. It's also deemed more sporty to leave these factors to chance, rather than live at the whim of a bloody-minded Game Master.

As the Read Me file puts it, "a person starts a story: 'It was a dark and stormy night.' A fantasy gamer starts a story: 'It was a [20-sided die roll]... lightless and [12-sided die roll]... rainy night.' An avid wargamer starts a story: 'It was a dark (35% visibility) and stormy, 7/8 overcast, night at 21:16. The terrain caused a minus three modifier to be applied to all movement rolls...'"



***Weather* is a program for randomly generating a day's weather patterns. As used by TV forecasters and roleplaying enthusiasts.**

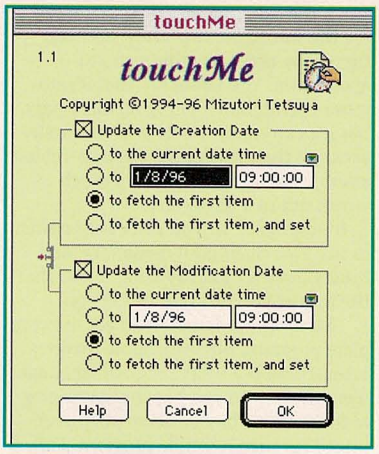
touchMe 1.1

Date changer
Freeware

I used to work in a school, and once there was a case where a pupil had gained permission to write his homework on his Mac at home. When the teacher asked for the homework on the day it was due, the pupil informed said teacher that the floppy disk he had brought it in on had broken and he would bring his homework in the next day. This he did. After a couple of minutes with the disk, the teacher gave the pupil detention for lying and doing his homework late.

How did he know? He simply selected the homework document's icon and chose **Get Info** from the **File** menu. This displays both the date that an item was first created, and the day it was last altered. However, the dinky little freeware program *touchMe* enables you to set these dates to whatever you wish.

This can aid you in pulling the wool over your teacher's eyes, but more importantly, you can use it to correct any errors that creep into your files – the type of errors caused by faulty clocks or when you're de-archiving stuff from the Internet. You could, of course, always ignore *touchMe* and merely change the settings in your **Date & Time** Control Panel, resaving your work with the appropriate timeline, but then isn't finding a complex solution to a simple problem what shareware's all about?



***touchMe* enables you to play God, changing the time by dragging and dropping. Not that God dragged and dropped the world in seven days.**

Plain Talking 1.0b3

Voice Synthesis
Beta demo

In MACFORMAT 40 we published a fascinating article about the Mac's voice synthesis capabilities, written by... um, well, me, actually. This article was part of a series which looked at the ways people with disabilities can get more out of their Macs. Soon after writing it, I became intrigued by this program.

Plain Talking enables you to prepare up to 360 written phrases which you can quickly recall in any order and then get your Mac to speak out loud. By preparing all the common phrases such as, "Good morning", "Please may I have..." and "Just put your clothes on the chair", you can quickly form whole sentences. The program will then read your sentence out loud, using Apple's standard MacInTalk System software. The idea is to use your Mac to give you a voice if you have none.

Once *Plain Talking* is set up, you press a key, and up to ten phrases or words beginning with that letter appear in a list. You press **[command]** and a number to select a phrase, then press another key to start the process again. If a word has not been preprogrammed into your list, you just type it in when you need it.

The theory is great, but it doesn't quite work. Having to use the **[command]** key is slightly cumbersome for most people, but it can be a major barrier if you have a physical disability. The program works surprisingly slowly, and, being a beta version, it does still have some bugs in it.

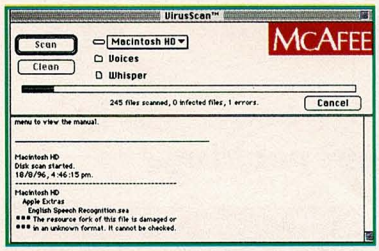
If future versions of *Plain Talking* are optimised for speed, then it could be useful, but at the moment I would suggest that you use *TypeIt4Me* and *SimpleText*. *TypeIt4Me* can store an unlimited number of phrases, it's fast, and it works with any application. *SimpleText* comes with the ability to read text back to you using MacInTalk, and it requires little memory.

VirusScan 1.0.1

Virus detection
Shareware $65

There's no official league table of the most popular shareware, but surely

***Plain Talking* enables your Mac to talk to you. I removed it, because my Mac kept telling me it wanted a new owner.**



***VirusScan* won't find much in the way of viruses on your Mac. After all, viruses are written by nerds, and nerds buy PCs.**

Disinfectant must be up there with universally loved titles like... oh, *StripMac*, say. A virus detection and eradication program, *Disinfectant* is marvellous in its simplicity and efficiency. Best of all, it's totally free and is updated whenever a new virus rears its digital head. Intriguingly, it's been a while since an update was needed, but then again there never were many viruses on the Mac.

It is almost entirely due to the success of *Disinfectant* that commercial virus programs have never featured strongly on the Mac, so it's curious that a company has suddenly decided to release one now. McAfee claims that its software, *VirusScan*, takes over where *Disinfectant* leaves off, but it's not clear what extras it includes. It even looks and works suspiciously like *Disinfectant*.

Worst of all, the shareware fee is too high, and I can't imagine why you would bother to pay for *VirusScan*, given that you can get *Disinfectant* for free. Next issue, we feature a shareware utility that scans for overpriced programs which play on your fears.

***Poetry Ink* is the ideal magazine if you think that novels really stink.**

Poetry Ink

Poetry
Freeware

This *DocMaker* file is issue ten of *Poetry Ink*, a magazine about poetry. It contains general articles about poetry, reviews of poetry multimedia, tips on writing and poetry contributions.

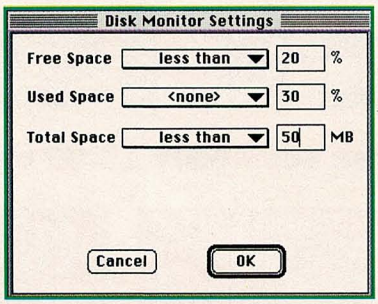
It's clearly created by enthusiasts and they are probably extremely talented writers as well. However, call me pedantic, call me elitist, call me a lamb casserole if you like, but a computer screen just isn't the correct medium for reading poetry. I'm not sure why, but it somehow cheapens the written word and makes it hard to fully appreciate it. In the same way that red wine requires a different shaped glass from white wine and fish demands different cutlery from steak, so it is with poetry – the medium is nearly as important as the message.

However, if you're a budding poet and want to give your voice wider scope, then sending in some work will be your best chance – assuming you have Internet access in your bare and lonely garret, of course.

Net Manager 1.1

Network utility
Shareware $20

Network managers are very strange creatures. Although their lair is usually a small office separated from the rest of the company they work for, their favourite habitats are small rooms full of large computers and implausibly knotted cables. Their speech is very limited, usually consisting of words such as router, gateway or protocol.



***Net Manager* warns you when the hard disks of other Macs on your network become full up. That's it. No, seriously.**

If you think that you might like to join this exciting community of loners, then you should get hold of a copy of *Net Manager*. It consists of two small programs. The client program needs to be launched on the other Macs on your network, while you have the administrator program on your Mac.

The administrator program can now constantly monitor all the other computers, waiting for the moment. What moment? Well, it's checking how much hard disk space is free. This can be specified in terms of megabytes or a percentage of the whole. If it drops to a dangerously low level, your program will beep and tell you which machine is turning critical.

If you're currently thinking that this seems like a rather silly, complicated waste of perfectly good drinking time, then you're a normal, healthy, well-adjusted individual. If you are thinking that this is a really exciting way to tell when your server is reaching a dangerously full point, then you really should apply for the post of network administrator and learn the true meaning of a core dump. **MF**

Rhetoric

Who needs rhetorical questions?

Quotation

Avoid quotations. As Ralph Waldo Emerson once said, "I hate quotations. Tell me what *you* know."

Redundancy

Don't be redundant; don't use any more words than necessary; doing so is highly superfluous.

Sir Richard The Lion Hearted

Game
Shareware $15

The accompanying Read Me to *Sir Richard The Lion Hearted* has absolutely nothing to do with the game, but instead is a pitiful plea for jobs by the Dobrin brothers, creators of this game. The idea is that you'll enjoy playing *Sir Richard*, be completely stunned at the incredible quality of the game, then offer these two hopefuls a well-paid job. It you're not in a position to employ them, then at least you'll be so impressed that you'll send them $15, your cat or your first born child.

It's a plan that can't possibly fail, unless, of course, the game's total crap. Suspicion is first aroused when you see that the preferred RAM size is 5Mb. You'll be further worried when you discover that this still isn't quite enough to launch the game unless you have your monitor set to 256 colours. After inching up the RAM allocation until you reach an enormous 14Mb, you might just manage to persuade the game to launch, only to be presented with a glitchy intro and instruction screen, which, unfortunately, turns out to be totally unreadable.

In the bin

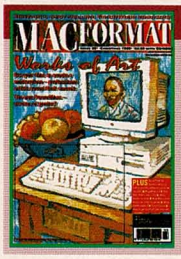
Once past the terrible music, you get the less than enviable opportunity to play at jousting. As the two horses wobble half-heartedly towards each other, you can raise or lower both your shield and your lance. The general idea is to block the enemy's thrust, while bypassing his defences. It's hardly sophisticated, high-end stuff – I can remember the same gameplay in a Commodore 64 game ten years ago.

The guy on the left is Richard The Lion Heart. Apparently, he got this prestigious title after singing at a tennis tournament.

I don't know if game design commissioners spend much time trawling the Internet, but for the sake of the Dobrin brothers' credibility, I sincerely hope they don't.

Back Issues

Complete the set – only £5.00 each, including postage and packing.



Issue 32 – Christmas 1995

Free MacGamer supplement!
CD-ROM: Sorry, no longer available.
Disk: *Pentominoes; Frog Xing; Xmas Lights, FindText 1.3* utilities.
Inside: Create great art on your Mac; the new range of PowerMacs; *PageMaker 6;* kids' multimedia; QuickTime VR; DOS-compatible Mac.

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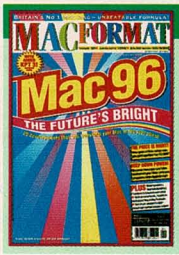
HD Disk **MFHD32**



Issue 33 – January 1996

Free alternative manual!
CD-ROM: *Doom; Descent; Voodoo Lounge;* education demos and more.
Disk: *Eclipse 3; Altair 2; Gravity Balls 1; TextBrowser 1.1; Aaron.*
Inside: What's on the Mac in 1996; KPT 3; guide to buying a Mac.

Order codes:
CD-ROM **MFCD33**
HD Disk **MFHD33**

Issue 34 – February 1996

CD-ROM: Sorry, no longer available.
Disk: *Disk Wizard; DOCMaker 4.1; SoundApp; ScreenShot; Symbionts.*
Inside: New 3D graphics technology and software; storage systems; kids' multimedia; *ClarisImpact 2; Doom 2* tips; handling text files; multimedia storytelling; *Descent;* text formats.

Order code:
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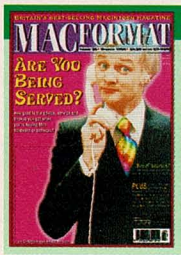


Issue 35 – March 1996

Free DTP tips book!
CD-ROM: *Painter 4; Klik & Play; CodeWarrior Lite* complete.
Disk: *Smoothie; Shatterball; NoteBook Maker; Diagonal; BeerStack.*
Inside: Mac service; natural media; *PageMill;* foreign files; *Marathon 2.*

Order codes:
CD-ROM **MFCD35**
HD Disk **MFHD35**

Issue 36 – April 1996

Double-disc special!
CD-ROMs: Sorry, no longer available.
Disks: Multimedia suite including *ProView; Koji the Frog;* free textures.
Inside: Create your own multimedia; CD writers; creating atmosphere effects; *Rebel Assault 2; Lightning-Draw GX;* 3D clip art; *SoundEdit 16.*

Order code:
HD Disk **MFHD36**

Issue 37 – May 1996

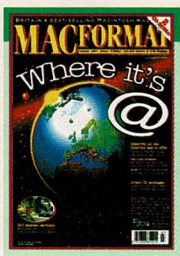
Free MacGamer supplement!
CD-ROM: Guide to upgrading your Mac; *Full Throttle, InfoGenie* demos.
Disk: Guide to Mac upgrades; *Quark* game; *SimpleBackup; Fly Swatter.*
Inside: Giant fold-out Mac family tree; Mac upgrades; *Illustrator 6.*

Order codes:
CD-ROM **MFCD37**
HD Disk **MFHD37**

Issue 38 – June 1996

CD-ROM: *ClarisWorks 4.0* updater; *Live Picture; X-Wing; Ice & Fire.*
Disk: Print utilities; freeware fonts; *Flippers; Biorhythms; Munchies.*
Inside: Perfect printing made easy; colour printers reviewed; *Live Picture 2.5; xRes 2.0; Bryce 2.*

Order codes:
CD-ROM **MFCD38**
HD Disk **MFHD38**



Issue 39 – July 1996

Double-CD special!
CD-ROMs: Internet essentials; official System 7.5.3 update; graphics spectacular; Claris suite; *Afterlife.*
Disk: *Skittles; Digital Address Book.*
Inside: Discover the Internet; *Extreme 3D, Ray Dream Studio, PhotoDeluxe.*

Order codes:
CD-ROM **MFCD39**
HD Disk **MFHD39**

Issue 40 – August 1996

CD-ROM: complete *Myst* screen-saver; *UniQorn; Fontographer; BeyondPress 2; HexWeb.*
Disk: 16 System enhancers; *FlipSide.*
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Issue 41 – September 1996

CD-ROM: *Photoshop 3.0.5, Director 5.0, Hexen* demos; *Goo* movies.
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Inside: Huge image manipulation feature; tests of scanners and digital cameras; *Let's KISS* spreadsheet.

Order codes:
CD-ROM **MFCD41**
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Issue 42 – October 1996

CD-ROM: *Bryce 2; Descent 2; QuickTime 2.5;* science demos.
Disk: *Bricks* building sim; *Super Carz;.StartUpScreenManager.*
Inside: Definitive Mac and clone round-up; e-mail packages; *Infini-D 3.5; IndyCar Racing 2;* science CDs.

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CD-ROM **MFCD42**
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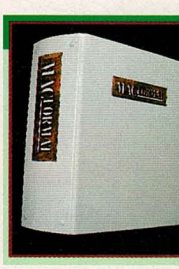

Macformat Binder

A design classic at £6.50, the Macformat binder not only keeps your issues in perfect condition, but also looks a treat on your bookshelf. Order a binder for yourself now! Alternatively, get one FREE when you buy any five back issues of Macformat.

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The power of hype

Windows 95 might be better than Mac 89, or it might not – but it's not the facts that count, says one MACFORMAT reader.

Mac owners who complain about the hype of Windows 95 are rather missing the point. We all know that in many respects the Mac is a far superior machine to a PC, and that the Mac has had an operating system comparable with Windows 95 for many years. I would imagine that even Bill Gates is aware of these facts. The most important point (especially for Bill Gates) is that, as far as Microsoft is concerned, if its products are marketed properly *it doesn't matter how superior the Mac is.*

Apple may be master of hardware, but Microsoft is master of *hype*ware, and that is what really counts. Microsoft managed, through shrewd and inspired advertising, to elevate Windows 95 to the status of a legend even before it was released. My local PC World stayed open until 2am on the launch day especially to sell Windows 95. You could not walk through the door without being inundated with posters and leaflets telling you how great it is. By contrast, this particular branch of PC World has only a handful of Macs for sale, a couple of which don't even work.

Another story to illustrate the point. Having owned both, I can honestly say that I prefer a Mac over a PC. But a few weeks ago I received a free disc through the post from Microsoft, containing a demo of Windows 95 which the firm thought I might like to try. Microsoft had obviously taken the trouble to realise that I had registered a copy of Windows 3.1 when I bought my PC, but that I was not registered as having a copy of Windows 95. Apple should take note: *that is how you sell a product.*

These marketing ploys have been so successful that Microsoft has easily managed to overcome all the speed and memory requirement problems which presented themselves when Win 95 was first released. People were told that Windows 95 is a God and they believe it, despite any evidence to the contrary.

Can anyone see Apple overcoming what Windows 95 did? It's true: Macs are fast becoming the Betamax video of the computer world – superior quality, but beaten by marketing.

Don't believe me? Walk into your local Dixons and see how many Macs are on sale. Collar a sales assistant and ask what they know about Apple Macs. I tried this test, and the assistant I picked said he knew nothing about Macs and promptly tried to sell me a Packard Bell.

I don't know how accurate this is, but I was told recently that 80% of the world's computers are running DOS. I believe it is too late for Macs to catch up. In years to come, they will be unheard of. Mark my words: my vision of the future is that Bill Gates will be running the world.

Ian Lodge
Basildon, Essex

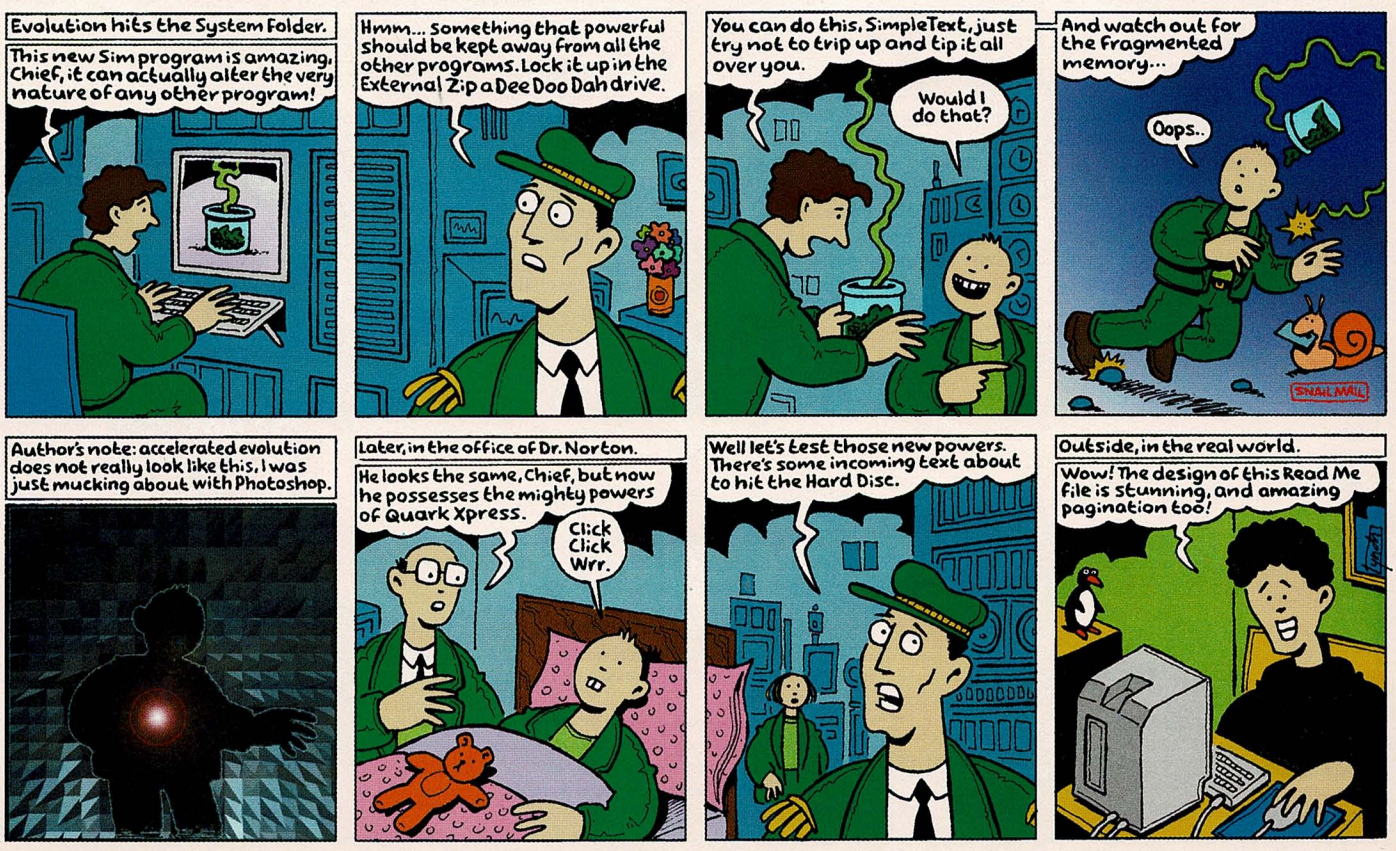
The opinions here are those of the author, not necessarily MACFORMAT or Future Publishing.

Speak out

To have your say, write to 'Talking Point', MACFORMAT, 30 Monmouth Street, Bath BA1 2BW. ASCII text on a disk is ideal but not essential. Or e-mail **macformat @futurenet.co.uk** – please include 'Talking Point' in the subject line. We reserve the right to sub-edit your letter, but won't alter the sense of any opinions expressed.

The Classic System Crew

by Bob Lynch


Evolution hits the System Folder.
This new Sim program is amazing, Chief, it can actually alter the very nature of any other program!
Hmm... Something that powerful should be kept away from all the other programs. Lock it up in the External Zip a Dee Doo Dah drive.
You can do this, SimpleText, just try not to trip up and tip it all over you.
Would I do that?
And watch out for the fragmented memory...
Oops..
SNAIL MAIL
Author's note: accelerated evolution does not really look like this, I was just mucking about with Photoshop.
Later, in the office of Dr. Norton.
He looks the same, Chief, but now he possesses the mighty powers of Quark Xpress.
Click Click Wrr.
Well let's test those new powers. There's some incoming text about to hit the Hard Disc.
Outside, in the real world.
Wow! The design of this Read Me file is stunning, and amazing pagination too!

Win superb Claris software worth £700

Want to boost your software collection? We have a bundle of three top Claris programs worth £398 to be won. And there are copies of the brand new *Home Page* for three lucky runners-up.

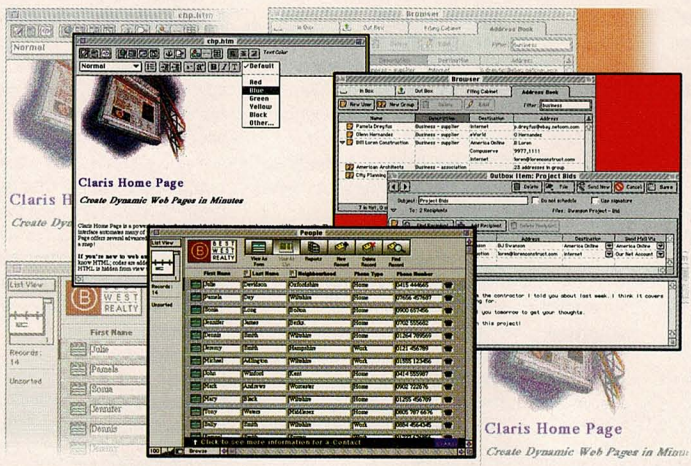
Claris is one of the best-known software companies on the Mac scene, with a reputation for making attractive, easy-to-use software. You could be the winner of an exclusive Claris suite in our competition.

The bundle includes *Claris Home Page 1.0*, the newest program to appear from the firm. Worth £105, *Home Page* enables you to create your own pages for the World Wide Web. Even if you're a beginner, *Home Page* makes it easy with on-screen editing and ready-made design elements like text field boxes and buttons to make forms. If you're a practiced Web user, you'll be pleased to hear that it's equally simple to set up pages with advanced *Netscape* features like tables and frames.

You can organise your e-mail with *Claris Em@iler 1.1*. This £59 program gives you the ability to sort all your e-mail, whether you have one account or several, and send out messages with an integrated address book system. And it's easy to set up *Em@iler* – just follow the step-by-step guide.

FileMaker Pro 3.0 is a powerful database program for assembling and sorting information. It's able to use a relational system, which means you can make links between different database documents for sophisticated, flexible data sharing. The £234 package includes over 40 templates designed for common uses like invoicing, records and contact lists.

The whole mouth-watering package is worth £398. And there are also three extra copies of *Claris Home Page* up for grabs by the runners-up. All you need to is answer the questions below, then send us your answers by mail or phone. See the "How to enter" box for details. The closing date is midnight on Friday 1 November.



Three for free! Win some superb Claris software to make you more productive at home or work: Web designer *Home Page*, *Em@iler* and *FileMaker Pro*.

The questions

1. Which program will be received by both the winner of this competition and all three runners-up?
(a) *Claris Home Page*
(b) *FileMaker Pro*
(c) *Claris Em@iler*

2) *Home Page* enables you to create pages for which medium?
(a) The World Wide Web
(b) Television
(c) Radio

3) What is *FileMaker Pro 3's* system for making links between databases known as?
(a) Relational
(b) Institutional
(c) Unbelievable

The rules

1. Entries must be sent to us by midnight on Friday 1 November.
2. Employees of Claris, Future Publishing and associated companies and their agents, together with their families, are not eligible to enter.
3. Multiple entries are not allowed.
4. The editor's decision is final, no correspondence will be entered into and there are no cash alternatives to the prizes.
5. No entries will be accepted unless directed to the phone number or address listed below. **MF**

How to enter

1. Post the coupon at left (or a photocopy) to

Claris Competition, MACFORMAT, PO Box 700, Wellingborough NN8 1CL

2. Alternatively, dial the Claris Competition Hotline:

0891 789 378

(The lines are open 24 hours a day, and your call should take no longer than three minutes. Calls are charged at 39p per minute cheap rate and 49p at all other times. You will have the opportunity to opt out from having your name included on a mailing list.)

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Your answers

1 (circle one) **(a)** **(b)** **(c)**

2 (circle one) **(a)** **(b)** **(c)**

3 (circle one) **(a)** **(b)** **(c)**

To help us improve the magazine, please answer the questions below. You will be entered into the competition even if you choose not to answer them.

Do you already subscribe to MACFORMAT? ❑ Yes ❑ No
Where do you use a Mac most often? ❑ Home ❑ Work
Do you have an Internet connection? ❑ Yes ❑ No

Your answers to the above questions will be used by Future Publishing for internal marketing purposes. All information will be treated under the terms of the Data Protection Act. Tick here if you do not wish to receive details of other offers from Future Publishing or other carefully selected companies. ❑

THE CHOOSER

MACFORMAT's comprehensive, up-to-date buyer's guide to Mac-related products that are worth your money, based on our own independent, authoritative tests.

- How to upgrade your Mac
- Complete guide to Mac models
- The MACFORMAT buyer's guide
- Mac product news
- How to be a smart buyer
- Free reader ads
- Mac user groups
- Mac diary
- Updaters and bug reports
- Mac contacts

Upgrades

Is your Mac too slow? Do you need to display more colours? Have you got enough RAM? For a quick guide to everything you need to know about enhancing your Mac and its capabilities, read on...

Consumer technology marches steadily on. Very approximately, you can expect a Mac you paid £1,000 for last year to be about half as fast as a Mac you can get for £1,000 this year. It's a fact of life and you'll just have to get used to the idea.

But don't get caught up in the technology race. If your Mac does what you wanted it to do last year, what's changed this year? Unless you're a professional designer or your work demands that you wring the last ounce of speed out of your Mac, if your technology was quick enough last year, it's still quick enough now.

However, as software technology marches on to keep pace with the hardware (or it may be the other way round – nobody knows), the latest version of your favourite application could place extra demands on your hardware, revealing its shortcomings. Maybe you need more RAM? Maybe extra features have slowed the processor down to a crawl? Maybe the manufacturer has abandoned attempts to keep the software compatible with old machines, instead optimising it for the latest models?

In each of these cases, the time may have come to do something about your Macintosh...

Not so fast

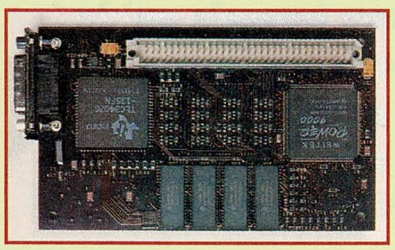
The first ever Mac used a processor called the Motorola 68000. At the time, it was the fastest chip ever fitted to a desktop computer. A fairly run-of-the-mill new PowerMac, the 7200/75, runs a staggering 288 times faster...

In between there were various generations of chip in the 680x0 family. After the 68000 came the 68020, then the 68030, and finally the 68040. (The 68LC040 variant was a lower-cost version produced for some Performas and PowerBooks and it didn't have an FPU – see "Floating Pointers" below.) Then came the PowerPC generation: first the 601, then the 603e, next the 604, and now the 604e.

The processor type is the main indication of your Mac's speed and power. The 68030 chip was much faster than the original 68000, and the 68040 offered a big speed improvement over the 68030... until the PowerPC chip came along. The *clock speed* of the processor generally has less impact on your Mac's performance than the processor *type*.

The clock speed is the frequency at which your Mac's main processor runs (measured in thousands of cycles per second or megahertz, abbreviated MHz). Some processor types are tweaked throughout their lives to gradually eke out more speed. Increasing processor speed isn't everything, though – the rest of the components on the motherboard have to be geared up to run at the increased clock speed for it to make a noticeable difference.

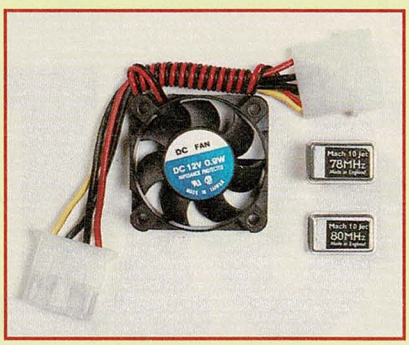
You can sometimes slightly improve the performance of your Mac by fitting a "clock-chipping accelerator". These devices make your processor run faster, which may make your whole Mac slightly quicker. However, you won't see much of a speed boost if the rest of the circuitry can't match the higher speed – and if it can't, you might also suffer more crashes. What's more, running a processor faster also makes it run hotter. Clock-chippers may extend your machine's useful life, but they might also shorten its physical life. They're an option not endorsed by Apple.



Strictly speaking, this video card from Xceed is an "expansion", since it enables your Mac to do something it couldn't do before. A new processor is an "upgrade" because it merely enhances your Mac's existing abilities.

Floating pointers

Of course, it couldn't be simple, could it? There are different processors, different clock speeds and, to top it all, your Mac may or may not have an FPU (Floating Point Unit or maths co-processor, a chip that handles the heavy maths involved in calculation-intensive applications like spreadsheets and 3D rendering). Some programs won't run if there's no FPU installed. Some Macs which don't have them fitted as standard can have them fitted later, others can't. PowerMacs have FPUs built in, but older applications don't always recognise that. It's a confusing jungle. Fortunately, our handy table overleaf lists every Mac model made and tells you whether or not your model has an FPU, or can accept one.



If your wallet can't stretch to a processor upgrade, you could try a clock-chipping accelerator. These increase the frequency at which your processor oscillates, and work with varying success depending on how far you intend to push your Mac.

If your Mac is showing its age, you could invest thousands in a brand new machine – or you could save some of those thousands by selectively upgrading the Mac you already own.

Upgrade or buy?

When it finally becomes obvious that your Mac is a tottering old geriatric you have a choice: either pack it off to that geriatric Macs home in the loft and buy a new, fresh young Mac, or upgrade your sturdy old companion's processor, RAM, hard drive or other internal organs to give it a new lease of life.

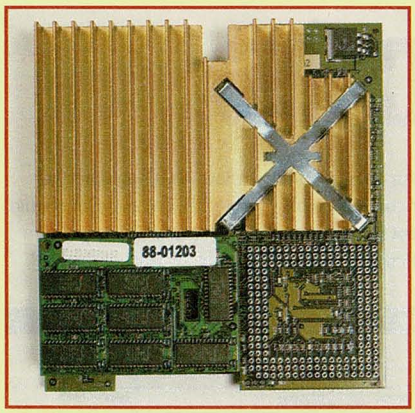
Buying a new Mac is expensive. You may be able to get the performance you need by fitting upgrades to your existing machine – and it could prove a lot cheaper.

On top of that, buying a new Mac may not solve your problems. If, for instance, you want to use a 21-inch monitor to display thousands of colours, you need a graphics card or more Video RAM (VRAM), not a new Mac. Find out first whether your current machine can be upgraded to suit your needs.

Upgrade or expand?

Strictly speaking, an "upgrade" is an addition that improves the general performance of your Mac, while an "expansion" enables it do something it couldn't do before or improves its performance in one specific area – like graphics.

If you're conscious that your Mac is just getting too slow to handle those complex spreadsheets and takes ages to scroll through your new novel, you need a motherboard upgrade – your processor is



If you've got a Performa 630 but really have your heart set on a PowerMac, then DayStar's PowerCard will replace your 68LC040 with a PowerPC 601 processor... for a price.

just too slow. So why can't you just fit a new processor? Sadly, the processor doesn't work on its own, but with a whole gaggle of other chips and circuits which have to be able to match the processor's pace.

Apple sells motherboard upgrades for many Mac models. These have the advantage of being "the real thing" and are usually supported by a full warranty. The downside is that they cost plenty and have to be fitted by Apple authorised engineers. Ultimately, they often cost only slightly less than an equivalent new Mac. Odd, that.

Fortunately, third party manufacturers supply alternatives, often cheaper, that come without the same guarantees (indeed, they will almost certainly invalidate your Apple warranty if it's still current) but do manage to give you the speed boost you want without emptying your bank account.

However, you might not need to change your processor to get the improvement in performance you want. Many programs require vast gobs of RAM (memory) to work properly, and although they can stagger along using the memory supplied with your Mac, they will run much better if you have more.

RAM is currently very cheap. No-one seems to know why, but everyone agrees that this situation is unlikely to last. Many PowerMacs were sold with only 8Mb of RAM, and once your System and its various Extensions and Control Panels have loaded, that might leave only 4Mb for your applications. That's not enough. Sure, you can resort to Virtual Memory (where your Mac uses some hard disk space as if it were RAM), but it will slow things down. A lot. There wasn't much point buying a PowerMac only to reduce it to the speed of an LCIII, now was there? Get more RAM!

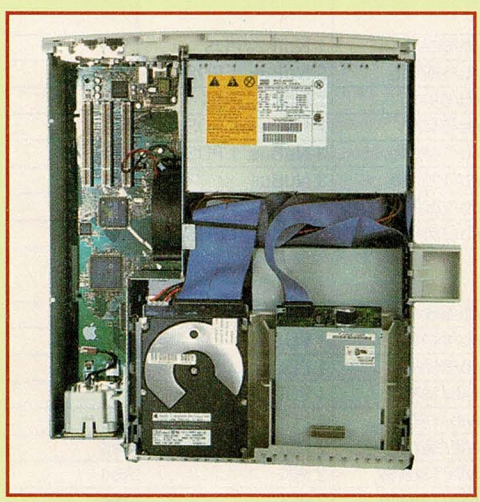
Alternatively, you could buy *RAM Doubler*, a program which uses clever memory management to give you up to three times the RAM you had before with only a small speed penalty (see page 98). But *RAM Doubler* currently costs £71 (around £30 more than the current price of 8Mb of "real" RAM), and it may also conflict with programs like *Photoshop* that have their own Virtual Memory systems or need large, unbroken blocks of RAM, so it may not always be an ideal solution.

Room for improvement

Not all your Mac problems will be solved by a faster processor or more RAM. There are many things you might want to do with your Mac that none of the available models will do "off the shelf" but which you can buy expansion cards for.

Graphic designers often need to use large monitors – say 21 inches – as well as displaying photo-realistic images in millions of colours. This needs lots of VRAM and processing power that you can only get by buying a plug-in video card.

Desktop video is another area where you need expansion cards, particularly if you intend to undertake video editing, where you'll need to be able to work with video input directly on your screen.



Before you even think about upgrading or expanding your Mac, you need to know what internal slots it has available. The 7200/90 (pictured) has three PCI slots, top left, but older Macs may have NuBus and/or PDS slots, which are quite a different proposition.

TV tuners are a more lighthearted example – using a TV tuner you could watch *EastEnders* in one window, while reconciling your bank account for the tax man in another.

There are numerous other examples of expansion cards – SCSI accelerators which will boost the speed of external drives and other SCSI devices, ISDN cards that provide ultra-rapid communications, multiprocessor cards (in machines that can take them) and more.

Slot machines

Once you've decided you're going to upgrade or expand your Mac, you need to make sure you get the right card for your machine. Different models have different slots (make sure you mention which Mac you have!), but they fall into three types:

PDS (Processor Direct Slot): This slot is linked directly to the processor. It's very fast and is the one used for accelerators and other upgrades that improve general performance. PDS slots can accept NuBus cards via an adaptor. All Macs except new PCI models have a PDS slot (some PCI machines have a "processor daughterboard" instead). This slot isn't always the same size, so do take special care that the card you're buying is designed to fit into your particular Mac.

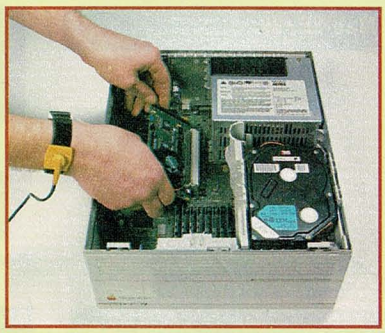
NuBus: NuBus uses a "bus" architecture, which basically means that it handles two-way traffic via a controller chip. It's slower, but more appropriate for machines where several cards must be connected. NuBus slots are designed to be used for cards that enhance certain aspects of your Mac, for instance graphics or networking.

PCI (Peripheral Component Interconnect): PCI slots are found on modern PCs and are the replacement for the slower NuBus – they are found only on new Macs. Like NuBus they use a bus architecture, but they are three times faster.

Do it yourself?

There's no reason why you should not open up your Mac and fit extra RAM or upgrade cards yourself – it's usually a case of simply plugging a card into the right slot. Of course, you need to be able to identify the right slot in the first place. The card should come with fitting instructions, and you may find the information you need in the manual that came with your Mac.

We do have a couple of dire warnings, though. While circuit boards are rather more robust than they look, they don't appreciate static electricity. If you like nylon shirts or habitually scuff your feet on the carpet, you could cause some serious damage. Always wear an anti-static wristband when touching the insides of your Mac – buy one if it's not supplied. Equally, you should always handle circuit boards by the edges – don't touch the chips.



Fitting new cards into your Mac is pretty straightforward, but it may well invalidate your warranty. An earthing strap worn around your wrist will protect delicate circuitry from static electricity (but it won't protect human tissue from mains electricity – make sure pull the plug out first!).

The other warning concerns your Apple warranty. You will almost certainly invalidate it if you do anything to your Mac yourself. You may have to get an authorised dealer or repairer to carry out even the most simple five-minute job. Check the terms of your warranty to see if this applies to you and happy upgrading! **ROD LAWTON**

Inside the Buyer's Guide...

All the information you need to make the right buying decision!

Complete guide to Mac models
What chip is in your Mac? How much RAM can you add? It's all here 134

The MacFormat buyer's guide
Your authoritative guide to the best hardware and software buys 138

How to be a smart shopper
Advice on your rights as a buyer 138

Mac product news
The latest releases and upgrades 140

Bug reports
Keep up to date with clashes and "undocumented features" 152

Mac diary
What's on and when it happens 139

Mac contacts
Retailers you can contact for current prices and promotions 156

Free reader ads
Buy or sell your old Mac kit here 158

Mac user groups
Contact other Mac fans near you 158

Mac facts

What processor is in your Mac? How much RAM can you add? With so many models over the years, it can be hard to keep track. Whether you want to know if you can use a program we've reviewed this issue or need to know what upgrades you can fit, our complete table of every Mac model ever should help. Current (or at least still widely available) models are coloured blue-green – see last issue for tests of them all.

Model	Processor	Speed	RAM/Max RAM	Expansion	FPU
Compact Macs					
Mac 128K	68000	8MHz	128K/not exp	None	No
Mac 512K	68000	8MHz	512K/not exp	None	No
Mac Plus	68000	8MHz	1Mb/4Mb	None	No
Mac SE	68000	8MHz	1Mb/4Mb	1 PDS	No
Mac Classic	68000	8MHz	1Mb/4Mb	None	No
Mac SE/30	68030	16MHz	1Mb/128Mb	1 PDS	Yes
Classic II (= Performa 200)	68030	16MHz	2Mb/10Mb	None	Optional
Color Classic	68030	16MHz	2Mb/10Mb	1 LC-PDS	Optional
Mac II Series					
Mac II	68020	16MHz	1Mb/68Mb	6 NuBus	Yes
Mac IIx	68030	16MHz	1Mb/128Mb	6 NuBus	Yes
Mac IIcx	68030	16MHz	1Mb/128Mb	3 NuBus	Yes
Mac IIci	68030	25MHz	1Mb/128Mb	3 NuBus	Yes
Mac IIfx	68030	40MHz	1Mb/128Mb	6 NuBus, 1 PDS	Yes
Mac IIsi	68030	20MHz	1Mb/65Mb	1 NuBus/PDS	Optional
Mac IIvx (= Performa 600)	68030	32MHz	4Mb/68Mb	3 NuBus	Yes (not 600)
Mac IIvi	68030	16MHz	4Mb/68Mb	3 NuBus	Optional
LCs					
Mac LC	68020	16MHz	2Mb/10Mb	1 LC-PDS	Optional
Mac LC II (= Performa 400)	68030	16MHz	4Mb/10Mb	1 LC-PDS	Third-party
Mac LC III (= Performa 450)	68030	25MHz	4Mb/36Mb	1 LC-PDS	Optional
Performas (non-PowerPC)					
Performa 475 (= LC475)	68LC040	25MHz	4Mb/36Mb	1 LC-PDS	Upgrade
Performa 630 (= LC630)	68LC040	33MHz	4Mb/36Mb	1 LC-PDS	Upgrade
Centris series					
Centris 610	68LC040	20MHz	4Mb/68Mb	1 NuBus/PDS	Upgrade
Centris 650	68040	25MHz	4Mb/136Mb	3 NuBus, 1 PDS	Yes
Quadra series					
Quadra 610	68040	25MHz	4Mb/68Mb	1 NuBus/PDS	Yes
Quadra 650	68040	33MHz	4Mb/136Mb	3 NuBus, 1 PDS	Yes
Quadra 660AV	68040	25MHz	8Mb/68Mb	1 NuBus/PDS	Yes
Quadra 700	68040	25MHz	4Mb/64Mb	2 NuBus, 1 PDS	Yes
Quadra 800	68040	33MHz	8Mb/146Mb	3 NuBus, 1 PDS	Yes
Quadra 840AV	68040	40MHz	8Mb/128Mb	3 NuBus	Yes
Quadra 900	68040	25MHz	4Mb/256Mb	5 NuBus, 1 PDS	Yes
Quadra 950	68040	33MHz	8Mb/256Mb	5 NuBus, 1 PDS	Yes
PowerMac Performas					
Performa 5200	PPC 603e	75MHz	8Mb/64Mb	1 PDS	Yes
Performa 5300	PPC 603e	100MHz	8Mb/64Mb	1 PDS	Yes
Performa 6200	PPC 603e	75MHz	8Mb/64Mb	1 PDS	Yes
Family Mac 5400/160	PPC 603e	160MHz	16Mb/136Mb	1 PCI	Yes
Family Mac 5400/180	PPC 603e	180MHz	16Mb/136Mb	1 PCI	Yes
Home Office 6400/180	PPC 603e	180MHz	16Mb/36Mb	2 PCI	Yes
Home Office 6400/200	PPC 603e	200MHz	16Mb/136Mb	2 PCI	Yes
Creative Studio 6400/200	PPC 603e	200MHz	24Mb/136Mb	2 PCI	Yes
Power Macintoshes					
PowerMac 6100/60	PPC 601	60MHz	8Mb/72Mb	1 NuBus/PDS	Yes
PowerMac 6100/66	PPC 601	66MHz	8Mb/72Mb	1 NuBus/PDS	Yes

Mac SE/30

Now only available second-hand, often at bargain prices, the SE/30 was the pinnacle of evolution among the original 9-inch mono "compact Macs". (The Color Classic came later, and didn't achieve anything like the sales or the popularity.) With its nippy 68030 processor and its extraordinary expandability (it could take up to 128Mb of RAM), it was the perfect tool for the power-user with a very small desk. It even had a PDS slot for expansion cards, although where Apple found the room inside the case is hard to imagine. What's more, it came with a floating-point unit, ideal for all those maths-intensive ray-tracing applications. Well, they meant well.

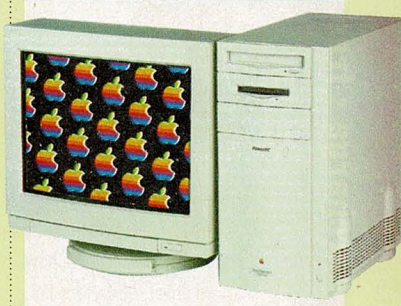
The SE/30 is not such a joke, though. It's tiny enough to fit neatly into a corner in the average suburban semi and lots of current software can still be run on these 68030 machines.

Performa 475

Looking remarkably like an LC, the Performa 475 turned into something of a bargain during the final days of the 680x0 Mac – and second-hand prices now are looking extremely good. For £400-£500 you could get a 68LC040-based Mac with colour monitor. You might only get 4Mb of RAM, which isn't enough for System 7.5, but the 475 can accept up to 36Mb, and with RAM prices currently at an all-time low, you might never get a better power-per-pound ratio. However, the only fly in the ointment is the 68LC040 processor. This is a cheaper version of the "real" 68040 and doesn't have a maths co-processor. This isn't usually a problem because most maths functions can be handled by Apple's SANE software (part of the System), but applications like 3D rendering packages won't work because SANE is just too slow to cope.

Model	Processor	Speed	RAM/Max RAM	Expansion	FPU
PowerMac 7100/66	PPC 601	66MHz	8Mb/136Mb	3 NuBus, 1 PDS	Yes
PowerMac 7100/80	PPC 601	80MHz	8Mb/136Mb	3 NuBus, 1 PDS	Yes
PowerMac 7200/75	PPC 601	75MHz	16Mb/256Mb	3 PCI	Yes
PowerMac 7200/90	PPC 601	90MHz	16Mb/256Mb	3 PCI	Yes
PowerMac 7500/100	PPC 601	100MHz	16Mb/512Mb	3 PCI, 1 PD	Yes
PowerMac 7600/132	PPC 604e	132MHz	16Mb/512Mb	3 PCI	Yes
PowerMac 8100/80	PPC 601	80MHz	8Mb/264Mb	3 NuBus, 1 PDS	Yes
PowerMac 8100/100	PPC 601	100MHz	8Mb/264Mb	3 NuBus, 1 PDS	Yes
PowerMac 8100/110	PPC 601	110MHz	8Mb/264Mb	3 NuBus, 1 PDS	Yes
PowerMac 8200/120	PPC 601	120MHz	16Mb/256Mb	3 PCI	Yes
PowerMac 8500/120	PPC 604	120MHz	16Mb/512Mb	3 PCI, 1 PD	Yes
PowerMac 8500/180	PPC 604e	180MHz	16Mb/512Mb	3 PCI	Yes
PowerMac 9500/120	PPC 604	120MHz	16Mb/768Mb	6 PCI, 1 PD	Yes
PowerMac 9500/132	PPC 604	132MHz	16Mb/768Mb	6 PCI, 1 PD	Yes
PowerMac 9500/200	PPC 604e	200MHz	32Mb/768Mb	6 PCI	Yes
PowerMac 9500 MP	PPC 604e	180MHz	32Mb/768Mb	6 PCI	Yes
Umax Mac-compatibles					
Pulsar 1500	PPC 604	150MHz	16Mb/1Gb	6 PCI	Yes
Power Computing Mac-compatibles					
PowerCenter 120	PPC 604	120MHz	16Mb/256Mb	3 PCI	Yes
PowerCenter 132	PPC 604	132MHz	16Mb/256Mb	3 PCI	Yes
PowerCenter 150	PPC 604	150MHz	16Mb/256Mb	3 PCI	Yes
PowerTower 180	PPC 604	180MHz	16Mb/256Mb	3 PCI	Yes
DayStar Mac-compatibles					
Genesis MP600	PPC 604e	150MHz	0Mb/1.5Gb	6 PCI	Yes
Portables					
Macintosh Portable	68000	16MHz	2Mb/9Mb	Modem slot	No
PowerBook 100	68000	16MHz	4Mb/8Mb	Modem slot	No
PowerBook 140	68030	16MHz	4Mb/8Mb	Modem slot	No
PowerBook 170	68030	25MHz	4Mb/8Mb	Modem slot	Yes
PowerBook 145	68030	25MHz	4Mb/8Mb	Modem slot	No
PowerBook 160	68030	25MHz	4Mb/14Mb	Modem slot	No
PowerBook 180	68030	33MHz	4Mb/14Mb	Modem slot	Yes
PowerBook 165c	68030	33MHz	4Mb/14Mb	Modem slot	No
PowerBook 145b	68030	25MHz	4Mb/8Mb	Modem slot	No
PowerBook 180c	68030	33MHz	4Mb/14Mb	Modem slot	Yes
PowerBook 165	68030	33MHz	4Mb/14Mb	Modem slot	No
PowerBook 520	68LC040	25MHz	4Mb/36Mb	Modem slot	Upgrade
PowerBook 520c	68LC040	25MHz	4Mb/36Mb	Modem slot	Upgrade
PowerBook 540	68LC040	33MHz	4Mb/36Mb	Modem slot	No
PowerBook 540c	68LC040	33MHz	4Mb/36Mb	Modem slot	No
PowerBook 150	68030	33MHz	4Mb/40Mb	Modem slot	No
PowerBook 190/66	68LC040	33MHz	8Mb/40Mb	2 PC card	No
PowerBook 190cs/66	68LC040	33MHz	8Mb/40Mb	2 PC card	No
PowerBook 5300/100	PPC 603e	100MHz	8Mb/56Mb	2 PC card	Yes
PowerBook 5300c/100	PPC 603e	100MHz	8Mb/64Mb	2 PC card	Yes
PowerBook 5300ce/100	PPC 603e	100MHz	8Mb/64Mb	2 PC card	Yes
PowerBook 5300cs/100	PPC 603e	100MHz	8Mb/64Mb	2 PC card	Yes
Duos					
PowerBook Duo 210	68030	25MHz	4Mb/32Mb	Modem slot	With Dock
PowerBook Duo 230	68030	33MHz	4Mb/32Mb	Modem slot	With Dock
PowerBook Duo 250	68030	33MHz	4Mb/32Mb	Modem slot	With Dock
PowerBook Duo 270c	68030	33MHz	4Mb/32Mb	Modem slot	Yes
PowerBook Duo 280	68LC040	33MHz	4Mb/40Mb	Modem slot	No
PowerBook Duo 280c	68LC040	33MHz	4Mb/40Mb	Modem slot	No
PowerBook Duo 2300c/100	PPC 603e	100MHz	8Mb/56Mb	Modem slot	Yes
Duo Docking Stations					
PowerBook Duo MiniDock	-	-	-	None	No
PowerBook Duo Dock	-	-	-	2 NuBus	Optional
PowerBook Duo Dock II	-	-	-	2 NuBus	Yes
PowerBook Duo Dock Plus	-	-	-	2 NuBus	No

PowerMac 9500 MP



Multi-processor (MP) Macs are coming! This is the next step forward for really serious heavyweight applications that ask too much of even the fastest 604e chip. The 9500 MP uses two of them, splitting processing tasks between them to produce dramatic speed increases. Of course, applications need to be specially designed for multi-processor Macs, but the biggest power-gobbler of them all, *Photoshop*, is already "MP-aware" and an increasing number of 3D applications are heading that way.

The clone-makers are in on the multi-processor race too – DayStar manufactures a range of MP Macs – but Apple's machine combines breathtaking speed with a highly competitive price. If you're not yet using MP software, though, stick to the 9500/200 – it's £600 cheaper and around 8% faster using regular PowerMac software.

PowerTower 180

Expect to see more and more Mac clones being launched onto the market, especially from Power Computing. The closest Apple rival to the PowerTower 180 is the 8500/180, which costs £600 more. Admittedly, the 8500 can accept more RAM and it has an 8x CD-ROM drive (as opposed to the PowerTower's 4x drive), but the Power machine has a bigger hard drive and an impressive software bundle – although, bizarrely enough, no keyboard. The clone market is changing very rapidly, though, and if you're shopping for a Mac, you should keep a close eye on the next few issues of MACFORMAT for bargains and news.

Cloned Macintoshes so far have proved to be both reliable and "compatible" and certainly not simply poor relations to "real" Apples. Power was the first of the clone-makers to hit the market, but it's recently been joined by both Umax and DayStar.

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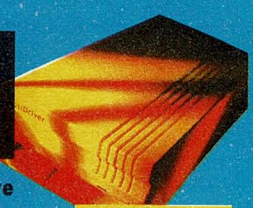

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£139
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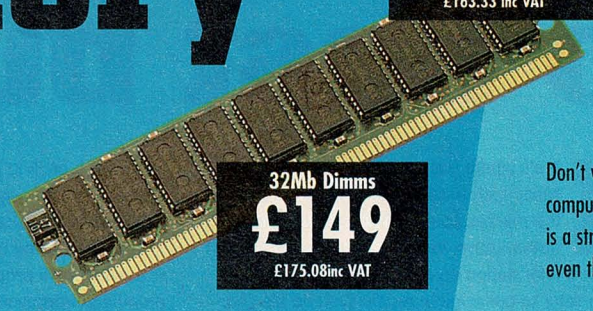

32Mb Dimms
£149
£175.08inc VAT

PRICE PROMISE
If you can find the same product at a lower price on the day you order, we will match or beat it!

The first and most effective upgrade any Macintosh owner should undertake is to add more RAM to their computer. Performance Direct is the largest retailer of Macintosh RAM in the UK. We have sold literally millions of megabytes of RAM to thousands of Macintosh users throughout the UK and Europe.

Don't worry if you have never upgraded a computer before. In most cases, adding more RAM is a straightforward task, easily accomplished by even the most non-technical of people.

- PowerBooks
- Quadra 900, 950
- Quadra 800, 840AV, Workgroup Server 80, 6150, 8150, 9150
- Workgroup Server 95
- LC, LCII, Performa 200, 400, 405, 140, 430
- IICX
- IICI
- II FX
- II, IIX
- IIVX,Performa 600, 600CD
- IISI
- LaserWriter Select 300
- LaserWriter Select 310
- LaserWriter Select Pro 810
- Colour LaserWriter Select NTR
- LaserWriter Select NTX, NTX-J
- LaserWriter Select Pro 600, 630
- LaserWriter Select 16/600PS
- LC475, LC520, LC575, LC630
- Centris 610, 650, 660AV
- Performa 450, 460, 466, 467, 475, 476
- Performa 550, 575, 577, 578, 630 ,631CD, 635CD, 636CD, 640CD
- Performa 5200CD, 5215CD, 5300, 5320
- Performa 6200CD, 6205CD, 6214CD, 6216CD, 6218CD, 6220CD, 6230CD, 6300CD
- Quadra 605, 610, 630, 650, 660AV
- Workgroup Server 60, MAC TV
- PowerMac 6100/60, 7100/66, 8100/80
- PowerMac 6100/60, 6100/66, 6100/66AV, 7100/66, 7100/66AV, 7100/80, 7100/80AV, 8100/80, 8100/90, 8100/100, 8100/100AV, 8100/110
- Performa 6110CD,6112CD, 6115CD, 6117CD, 6118CD
- PowerMac 7200, 7500, 7600, 8200, 8500, 9500
- Pentium

- Requires Special Memory – please call.

Use the colour coded guide below to choose the right memory for your Mac.

MEMORY	4Mb	8Mb	16Mb	32Mb	64Mb
30 Pin Simms	£23	–	£123	–	–
72 Pin Simms	£17	£29	£63	£139	–
PowerMac Dimms	£27	£36	£69	£149	£299
Powerbook Memory from	£59	£89	£139	£279	–

Above prices are for business users and exclude VAT. Consumers please add 17.5% VAT. Prices and specifications are subject to change without notice.

Scanners

Whether you need a quick black & white scan for faxing or a fully colour matched image ready for press, Umax have the scanner for you. The new range of single pass Umax scanners are faster and easier to use then ever before meaning that you no longer need to be an expert to get top quality scanned images from the desktop to your Mac. Umax scanners are Mac & PC compatible and come with a 12 month on site warranty. Options include transparency adapters, document feeders, Adobe Photoshop, Binuscan and Textbridge software at preferential prices.

Umax Powerlook II from
£1499
£1761.33 inc VAT

Umax Vista S12 from
£499
£586.83 inc VAT

Umax Vista S6E from
£249
£292.58 inc VAT

UMAX Vista S12
- Extremely fast (A4 Full Colour in 21 seconds)
- Award winning
- Optical Resolution – 1200 x 600dpi, Interpolated 9600 x 9600dpi
- Optional transparency adapter

UMAX Vista S6E
- Extremely fast (A4 Full Colour in 18 seconds)
- Award winning
- Optical Resolution – 600 x 300dpi, Interpolated 4800 x 4800dpi
- Optional transparency adapter

UMAX Powerlook II
- High-end prepress scanner
- Winner of MacUser Reviews in 1994 and 1995
- 36 bit 69 billion colours
- Dynamic Range of 3.3
- Optical Resolution – 1200 x 600dpi, Interpolated 9600 x 9600dpi
- Includes transparency adapter

performance direct

Phone: 01784 477 477

Fax: 01784 477 377
Education Tel: 01784 477 887

NO Credit Card Surcharges

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All prices shown are exclusive of VAT and delivery. Goods are offered subject to availability. Barring system failure, delivery for items in stock is made on the next working day before 17.00, at a charge of £9.00. Morning or Saturday deliveries are available, at extra cost. International orders welcome. All sales subject to terms and conditions. E. & O.E. Prices and descriptions are correct at time of going to press, however they are subject to change without prior notice. Please call us for the most up-to-date prices.

MACF09

• lowest prices • next day delivery • 7 day money back guarantee • huge stocks • no credit card surcharge • free technical support •

Buying Advice

Whether you're buying in person or by mail order, you can make the transaction go as smoothly as possible, and put things right if they go wrong... Note that everything here applies to buying from a business; most of it does *not* apply if you're buying from a private seller in MACFORMAT's reader ads pages.

How to protect yourself

If you are buying goods of more than £100 in total value, always use a credit card if possible, for the whole or even just a part of the price. That way, in the unlikely event of anything going wrong, you'll be legally entitled to claim against the credit card company as well as the seller. (You won't get your money back twice, of course, but the credit card company is likely to be there to claim against, even if the seller has gone bust.) You might also get extra insurance for your purchase – check with your credit card company.

If you don't have a credit card, pay by cheque or postal order (ask at your post office). Never send cash through the mail, even by registered mail. Apart from any risk of theft, you can't stop payment if you need to, and even if you have proof of posting it is impossible to prove how much you sent.

Keep records. If you're paying by credit card over the phone, keep a note of the exact time of the order and the name of the person who took it, and ask for an order number. If you're paying by cheque, make sure you fill in the details of the date, amount and payee's exact name on the stub – and keep it somewhere safe! Always keep all receipts, and make notes of all correspondence by mail or phone.

Other sensible precautions

- Shop around for the best price. Always check what is included – packing and delivery? Any necessary cables, etc? VAT? By law, an advert must say *explicitly* if VAT is *not* included; if it doesn't, VAT *is* included. But this can be in the small print; do check.
- If you're buying by mail, ring first to confirm price and availability. Explain what you want the product for and satisfy yourself that you're getting what you need – you can't return something later just because you've changed your mind. Ask what the dealer's policy is should you have problems – few mail-order dealers offer "on-site" service. Find out when you can expect delivery.
- If you're buying in person, check that everything works before you leave the shop. If you've ordered by mail, check the goods carefully when they arrive. If the driver's in a hurry, mark the delivery note "Goods not inspected". If there's any part of the product you're not happy with, don't use it. If you do, you could be deemed to have accepted it.
- Whether you bought it by mail or in a shop, the law says a product must be:

1. "of merchantable quality" (that is, broadly speaking, it must work),
2. "as described" (in the advert or in ➤

Buyer's guide to best buys

Here's where you can discover the best Macintosh hardware and software buys on the market, based on MACFORMAT's own authoritative, independent product tests. If you want more information on any product, ring the contact listed or refer to our original review (you do file your MACFORMATS, don't you?) – if you need to order an issue you missed, turn to our back issues service on page 128.

The details listed are those of the current version of each product. All prices quoted are list prices (RRPs), *including* VAT – check the ads in this issue for the best current deals on whatever you're interested in. Where we reviewed an earlier version of a product, this is noted in the comment line. Although we quote the ratings from our original review, the comments about each item are based both on that review *and* how we see the product now. *Microsoft Word 6* might be just as good now as when we reviewed it back in MACFORMAT 20, but the competition has come on a long way. We plan to keep re-evaluating classic software in an up-to-date context as part of this section.

Note that some details may have changed since we first reviewed these products – hardware in particular is updated and improved regularly. The information in these listings has been thoroughly checked and is correct to the best of our knowledge as we go to press, but prices and specifications can change at any time. We recommend that you always make enquiries before you buy, to verify that the product you're considering will meet your needs.

The MACFORMAT Buyer's Guide aims to provide you with a one-stop, up-to-date directory of Mac products worth buying. You can help keep it authoritative, by passing on any corrections or updated details you know of. Write to us at the editorial address on page 6, or e-mail **macformat@futurenet.co.uk** with "Buyer's Guide" in the subject line.

Storage media

What do you do when your hard disk is full to the brim? Or when you need to transport hundreds of megabytes of data and there's no fast network link available? External storage devices can provide much-needed extra storage capacity, or a portable storehouse for vast quantities of data. (See also this issue's group test, page 76.)

Name	Price	Rating	Reviewed	Contact	Telephone
Electronique D2 1.2Gb HD	£345	84%	MF34	Electronique D2	0171 833 0009

It's not the fastest, it's not the cheapest, but it's got style. It's also got an AV mechanism for constant-flow CD mastering. We reviewed the Electronique D2 1Gb HD.

Gasteiner 1Gb HD	£293	90%	MF34	Gasteiner	0181 345 6000

MACFORMAT Classic Fast, cheap and compact storage medium, but with a fan that gives neighbours the impression you're testing rockets in your bedroom.

Iomega Zip Drive	£176	91%	MF34	Iomega	0800 973194

MACFORMAT Classic Neat styling, including a power supply built into the mains plug, and inexpensive 100Mb disks which are only slightly thicker than 3.5-inch floppies.

MicroNet Jaz Drive	£351	94%	MF38	MicroNet	01926 470460

MACFORMAT Classic The successor to the Zip drive uses astonishing 1Gb 3.5-inch cartridges and is fast, portable and cheap. Wonderful. This is a version Micronet has licensed from maker Iomega.

ONE Tech 2.6 Optical Drive	£1268	95%	MF34	MacTrix	0181 566 8988

MACFORMAT Classic Pretty fast, quiet, inexpensive and hard to fault. Oh, and the documentation is good too. If only they could do something about the styling. We reviewed the ONE Tech 1.3Gb MO.

Quantum Fireball 1.2Gb HD	£269	88%	MF34	Performance Direct	01784 477477

Very quiet, very fast and a good-length SCSI cable. We reviewed the Quantum Fireball 1Gb HD.

SyQuest 230Mb	£270	94%	MF34	SyQuest	0131 339 2022

MACFORMAT Classic Uses 3.5-inch 135Mb cartridges and is extremely fast. The power supply is an annoying blob that sits next to the drive and the manual is tatty. We reviewed the SyQuest EZ135.

TekOptic 1.3/4ext Gb MO	£1,110	81%	MF34	TekWare	01384 392121

Huge, fast and supports auto-eject. Takes up a lot of desk space, though, and isn't quiet. A 4Mb cache boosts the speed.

Monitors

Not all monitors are the same. How sharp is your picture? Are the colours crisp and true to life? What resolutions are available? Is there any distortion? We've tested "standard" 15-inch models from a number of manufacturers and a similar number of 17-inch units for those who need that little bit more Desktop real estate.

Name	Price	Rating	Reviewed	Contact	Telephone
AppleVision 1710	£927	92%	MF40	Apple	0800 127753

MACFORMAT Classic 17-inch monitor with easy controls, overscan (no black borders) and superb picture quality – plus colour calibration software.

CTX 1785S	£587	81%	MF40	CTX	01923 818461

Good picture quality, if a tad unsharp, with good, vibrant colours. Maximum resolution is 1600 x 1200 pixels.

Hitachi 17MVX Pro 2	£704	85%	MF40	Hitachi	0800 605 605

Good performance even at high resolutions, although setting up the screen could get fiddly and tedious.

Iiyama Pro 17-inch	£735	89%	MF40	Iiyama	01438 745482

The DiamondTron screen provides excellent quality even at the staggering maximum resolution of 1600 x 1200. Loses out slightly on ease of set-up.

Mitsubishi 15HX	£376	82%	MF40	Mitsubishi	01707 276 100

Uses Mitsubishi's own DiamondTron to get close to Trinitron quality and provide an excellent display, with only a slight fall-off at the highest resolution.

Mitsubishi 17HX	£758	83%	MF40	Mitsubishi	01707 276100

Good quality except at the highest resolution, and comes with an anti-moiré function. The manual could be more helpful.

Samsung 15GLi	£406	81%	MF40	Samsung	0800 521 652

Good display for a unit with an FST tube although quality suffered as usual at the highest resolution. Unusually for a 15-incher, you get a degausser.

Samsung 17GLsi	£822	84%	MF40	Samsung	0800 521 652

A 17-inch unit with a maximum resolution of 1280 x 1024 and a Trinitron tube. Excellent quality at all resolutions.

Sony 15sfII	£465	91%	MF40	Sony	0181 760 0500

MACFORMAT Classic Unusually for a 15-inch monitor, the Sony provides superb picture quality at all resolutions, thanks to its Trinitron tube, great-looking design and fuss-free setting up.

Sony 15sx	£410	81%	MF40	Sony	0181 760 0500

Sony's budget 15-inch model doesn't have quite the quality of the 15sfII and sports a lower maximum resolution.

Sony 17sfII	£763	92%	MF40	Sony	0181 760 0500

MACFORMAT Classic Picture quality is excellent at all resolutions, setting up is easy and the manual is excellent – a rival to Apple's own AppleVision 1710.

Taxan Ergo Vision 730TCO	£735	84%	MF40	Taxan	01344 484646

This 17-inch monitor offers better picture quality than its 15-inch smaller brother and easier to set up. We reviewed the Taxan Ergo Vision 730LR.

Speakers

Any hi-fi expert will tell you that the weakest link in the sound chain is the speakers. Budget models supplied with your Mac might not break the bank, but they might break your eardrums. We found out which speakers do justice to the CD-quality audio that your Mac can pump out.

Name	Price	Rating	Reviewed	Contact	Telephone
Goodmans Active 70	£40	85%	MF40	Goodmans	01705 673 673

Not as loud as the 80W 'PMPO' suggests, but good quality CD audio output and game effects for the money. We reviewed the Goodmans Active 85.

Sony SRS-PC91	£128	87%	MF40	Sony	0181 760 0500

Pretty loud with very good quality for both music and games, even if the bass control is more of a treble-limiter. We reviewed the Sony SRS-PC9.

Yamaha YST-M15	£69	85%	MF40	Yamaha	01908 366700

Very loud and huge amounts of bass, good high end and a bit of a gap in the middle – but they still sound great.

Buying Advice continued

person – and this criterion applies also if you're buying from a private seller), **3.** fit for the purpose for which it was sold or which you specified.

If it fails to meet any or all of these criteria, you are entitled to return the product for a full refund, get compensation for all or part of the value, or get a replacement or free repair, depending on the seriousness of the defect. These are the "statutory rights" that adverts always say are "not affected" by any extra guarantees. A dealer can't deny these rights or add conditions (like "provided goods are returned to us at your expense within seven days", etc).

How to complain

If you're not happy about something, always contact the supplier first and politely explain your problem. Be patient; if there's some technical problem, it may genuinely take the dealer some time to find the solution. Most difficulties are sorted out at this stage without further fuss.

If yours isn't, put your complaint in writing, clearly stating your problem and what you'd like done. Give the firm a reasonable time to reply – say 14 days or so.

- If your complaint is not resolved, you may need to take some sort of legal action to enforce your rights. This need not cost you a lot of money. Seek advice from a solicitor (ask about the free advice scheme – you may not have to pay for the initial consultation). Or contact one of the following (check in your local phone directory):
- the Citizen's Advice Bureau,
- Trading Standards Office (listed under your local council),
- Office of Fair Trading, or
- County Court (ask about the Small Claims procedure).

Where to buy

- Mail order companies are ideal if you know what you want and how to set it up, so you just want the best price.
- Retailers are a good bet if you need advice and technical assistance, and you want to examine products before you buy them.

There are a number of types of retail outlet selling Macintosh products:

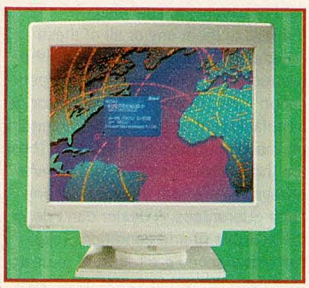
- Authorised Apple resellers may not always offer the best price, but you can expect a wide choice of hardware and software and considerable expertise.
- Major retail chains can be another, sometimes more accessible, source. The Dixons group sells a limited number of models in the Mac range, while Comet and PC World stock hardware and software. Check with your local store before visiting, though – only the larger stores may stock a useful range.
- Entertainment chains like HMV now carry Mac software in some branches.
- Finally, independent retailers may stock Mac products. Check your local Yellow Pages for more information.

➤ page 140

Product News

(For more product news, see page 20.)

Large-screen monitors



Looking to **upgrade your monitor?** Iiyama has just announced price reductions on its 21-inch models. The **Vision Master 21** will weigh in at around £1,130, a cut of 19%, while the **Vision Master Pro 21** comes down 20% to a typical street price of £1,170. The Pro version comes with a DiamondTron tube, which offers better definition and clarity than the standard FST tube fitted to the cheaper model.

Prefer a 17-inch model? Iiyama has also cut prices on those. The **Vision Master 17** is now about **£580**, while the **Pro** version falls to around **£650**.

If you want to find out more, call **Iiyama** on **01438 745482**.

New Umax Mac clones

Mac-compatible maker **Umax** has just released the **Pulsar Pro 2000 workstation**, based on a 200MHz 604e chip. For around **£3,640** (street price) you get a 512K Level 2 cache (expandable to 1Mb), 16Mb of RAM (expandable to 1Gb), a 2.1Gb hard drive, an 8-speed CD-ROM drive and a 128-bit accelerated graphics card with 2Mb of Video RAM – all of which makes the 2000 perfect for **graphics professionals**.

You also get six standard PCI slots and five spare drive bays. LocalTalk and Ethernet are built in and the Pulsar range will enable you to add a second processor to handle multi-processor applications, as and when they arrive.

Look out for more Mac clones from Umax later this year, at some "aggressive" prices. In the meantime, call distributor **IMC** on **01344 872800**.

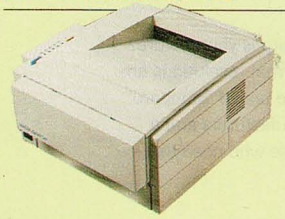
HTML in XPress

XCHANGE INTERNATIONAL

HexWeb 2.1 is the latest version of XChange International's **Web page extension** for ***QuarkXPress***. *HexWeb* takes existing *XPress* documents and converts them into Web pages as painlessly as possible. The *Detroit News* apparently converts over 200 documents per day. *HexWeb* enables you to:

- Automatically set up a structure for multiple Web pages from within *XPress*
- Set up tables of contents
- Handle frames interfaces
- Check links

Printers



Are you shopping for a mono printer or colour? Portable or desktop? PostScript or non-PostScript? Inkjet or laser? We've reviewed dozens of printers for every need, and here is our pick of the best. Don't forget to shop around for the best prices, since these change continually (usually downwards). And for more on what to look for, see MACFORMAT 38.

Name	Price	Rating	Reviewed	Contact	Telephone
Apple StyleWriter 1500	£275	90%	MF38	Apple	0800 127753

MACFORMAT Classic For the price, excellent colour performance even on plain paper. Its budget background begins to show on coated and glossy papers, though.

Apple StyleWriter 2500	£359	84%	MF38	Apple	0800 127753

A big improvement on its predecessor, the 2400, but not quite in the sam.e league as colour rivals from HP and Epson.

Citizen PN60	£340	82%	MF27	Citizen	01753 584111

Minute portable printer that can output in colour. The size makes the controls fiddly, though, and performance is suspect.

Epson EPL-5500	£469	89%	MF39	Epson	01442 61144

Compact and light 600dpi PostScript printer with a useful 5Mb of RAM. Documentation is turgid, though, and you'll need to buy a lead for your Mac.

Epson EPL9000	£2,055	84%	MF29	Epson	01442 61144

A3 600dpi PostScript printer that provides good quality output from a surprisingly compact box.

Epson Stylus Pro	£513	90%	MF38	Epson	01442 61144

MACFORMAT Classic Built like a breeze block, but offering stunning smoothness and resolution, even though greens turned a bit muddy. Almost as good as a dye-sub printer.

Fargo PrimeraPro	£1,585	84%	MF38	Bannerbridge	01268 419101

Thermal wax output is harsh and grainy, but the dye-sub output has superb definition and colour that may prove good enough for match printing.

FotoFUN! Printer	£493	87%	MF31	Bannerbridge	01268 419101

Affordable, good quality dye-sub colour output. Takes up little space but only prints out 6-inch x 4-inch snapshots.

HP LaserJet 5MP	£1,198	95%	MF29	Hewlett Packard	0990 474747

MACFORMAT Classic 600dpi PostScript laser printer with excellent greyscale and resolution enhancement for remarkable output quality at the price.

HP DeskJet 340	£235	85%	MF27	Hewlett Packard	0990 474747

Portable 300dpi inkjet with colour capability and excellent output quality. Clear leader amongst the portables at this price. We reviewed the HP DeskWriter 320.

HP 870cxi	£494	92%	MF38	Hewlett Packard	0990 474747

MACFORMAT Classic First-rate colour balance, excellent contrast and very good performance on plain paper is combined with good value. It's a winner! We reviewed the HP 850C.

Lexmark Optra R Plus	£1,434	84%	MF29	Lexmark	01628 899 088

Magnificent 1200dpi PostScript output from a device that could crush your desk. Expect long print times. We reviewed the Lexmark Optra R.

NEC SuperScript 3000	£1,115	88%	MF35	NEC	0345 404020

Three different printing technologies at a bargain price, but second-division quality and long print times.

Tektronix Phaser 140	£1,351	88%	MF38	Aztec Associates	01274 590 555

Affordable PostScript colour printer. Colour and definition nearly on a par with non-PostScript models.

Modems

If you want to connect to the Internet, to bulletin boards, on-line services or even friends and acquaintances via your Mac, you need a modem. The faster the modem, the cheaper it will be to run and the less time you'll spend twiddling your thumbs. And these days, speed doesn't cost that much.

Name	Price	Rating	Reviewed	Contact	Telephone
Accura Message Modem	£219	84%	MF39	Hayes	01252 775577

Big, ugly, difficult and expensive. At least it works well. And being a Hayes, this 28.8K modem should work with just about any comms software. We reviewed the Hayes Optima.

Global Village Platinum	£234	92%	MF39	InfoBank	0181 991 0578

MACFORMAT Classic The Teleport Platinum is a slick, fast and stylish 28.8K modem with a good manual, fax and OCR software. You get a progress bar even while it's running in the background.

Name	Price	Rating	Reviewed	Contact	Telephone
Lasat Unique Safire	£187	84%	MF39	Lasat	0181 899 1765

It's tiny, it looks cool and it comes with a ten-year guarantee – but no comms software, alas. Speedy and reliable, this 28.8K job tolerates line noise well.

Motorola 3400	£150	90%	MF39	Gasteiner	0181 345 6000

MACFORMAT Classic Uncomplicated and easy to set up 28.8K modem, but with rather basic fax software. The manual is indifferent but the modem itself is fast and reliable.

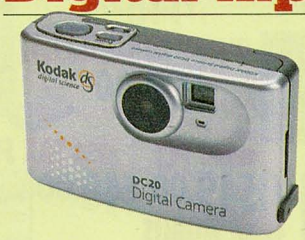
SupraExpress 33.6	£175	89%	MF39	CU	0181 358 5857

Plain-looking 28.8K modem powered by your ADB port. Dialling can be slow, but faxes are reliable. We reviewed the SupraExpress.

US Robotics Mac & Fax	£199	89%	MF39	US Robotics	0800 225252

The Mac & Fax Sportster is a fast and reliable 28.8K modem, but no straight-through port to plug a telephone into if you only have one line. Styled like a clock radio.

Digital input



How do you get analogue data from the real world into digital data on your Mac? Here is MACFORMAT's pick of scanners, digital cameras and related software. For more details on digital imaging, see our cover feature in MACFORMAT 41.

Name	Price	Rating	Reviewed	Contact	Telephone
Apple QuickTake 150	£525	72%	MF41	Apple	0800 127753

Indifferent picture quality and flash accuracy with this digital camera. You do get a useful image editing program.

Epson GT-5000	£469	81%	MF41	Epson	01442 61144

This scanner's a little fuzzy but has reasonable colour reproduction. A little lacking in features, with poor documentation.

Kodak DC-20	£353	91%	MF41	Kodak	0800 281487

MACFORMAT Classic Pretty low-resolution digital camera but extremely easy to use and fun too. Comes with some basic image editing software and other useful goodies.

Kodak DC-50	£1,058	87%	MF41	Kodak	0800 281487

This camera's higher price pays off with crisp images and deep colours. You get a zoom lens, and you can fit storage cards up to 40Mb in size.

Linotype-Hell Saphir	£3,819	89%	MF41	Linotype-Hell	01242 285065

Superb quality scanner with excellent colours and incredible sharpness. But then you'd be entitled to expect it at the price.

Microtek Scanmaker E3	£328	86%	MF41	CU	0181 358 5857

At 600dpi images were a bit fuzzy and lost subtlety, but overall performance very acceptable for a scanner of this price.

Umax Vista S6E	£499	85%	MF41	IMC Distribution	01344 872 800

Very fast scanner but with a little fuzziness and difficulty handling greens. Otherwise quality was good, given the price.

Visioneer PaperPort	£293	86%	MF28	CU	0181 358 5857

Tiny A4 mono scanner that can sit between your keyboard and Macintosh – sheets are rolled in and out.

Office

Most Macs are used at one time or another in the office or study, using worthwhile applications like word processors, databases and spreadsheets. There are many related "productivity" applications, too, like personal organisers and presentation packages. Here's our current pick of the best.

Name	Price	Rating	Reviewed	Contact	Telephone
Act! 2.5	£199	86%	MF36	Symantec	01734 814 230

Feature-heavy contacts manager that works well in sales offices but lacks the flexibility to works as a personal organiser.

C•A•T	£222	81%	MF32	Chang Labs Europe	01285 644403

An endlessly customisable personal office organiser that can cope with correspondence, client lists and even invoicing.

ClarisImpact 2	£152	86%	MF34	Claris	0181 756 0101

Combines spreadsheet functions with charting, outlining and DTP for the ultimate low-end business presentation suite.

ClarisWorks 4.0	£152	92%	MF31	Claris	0181 756 0101

MACFORMAT Classic The Mac's standard all-in-one office suite. Inexpensive, yet very powerful in the right hands and highly flexible too. Get it and use it.

Product News continued

■ Export both images and captions as a table.

HexWeb also supports *Shockwave*, Java and QuickTime. To find out more about *HexWeb 2.1*, call **XChange International** on **0171 637 2966**.

Thundering good video

Designers and image manipulators! Sunglasses on for the **ThunderPower 30/1920 PCI graphics card** from Radius, which offers **30-bit colour** for the ultimate photo-realistic display. You also get the option of **Super Resolution** displays at an amazing 1,600 x 1,200 pixels, although it needs special calibration tools and high-resolution HDTV monitors expected to go on sale soon. The display is moved along with **QuickDraw acceleration** and **hardware pan and zoom**. You also get on-the-fly bit-depth switching. All this is expected to cost about **£1,600**.

Radius has also announced its new **Thunder 3D graphics card**, which features 30-bit colour and Super Resolution, but adds QuickDraw 3D acceleration, a 3D Labs **Glint 500TX chip** for 3D image processing, a Delta Pipeline Processor triple-ported memory architecture, 24Mb texture-mapping memory and more for an anticipated street price of **£3,500 to £4,000**. Find out more by calling **Radius** on **01483 772773**.

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Living Books has a reputation as one of the best publishers of kids' interactive storybooks. This autumn it's launching four more at £30 each, aimed at kids between three and eight.

Sheila Rae, the Brave is a sing-along reading adventure. ***Green Eggs and Ham*** is a Dr Seuss title with some additional activities built into the pages. ***Little Monster at School*** follows our hero as he learns the alphabet, arithmetic, science and more. ***Arthur's Birthday*** uses animations, talking characters and fun sounds to teach sentence structure and comprehension.

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➤ page 146

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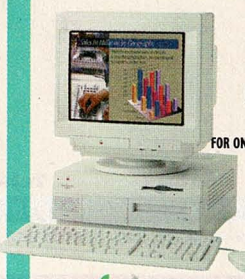

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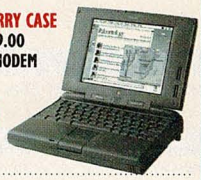

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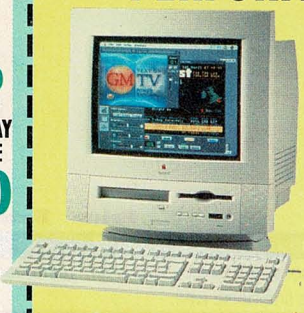

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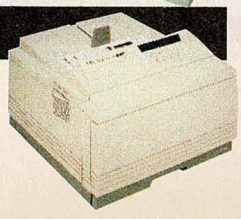

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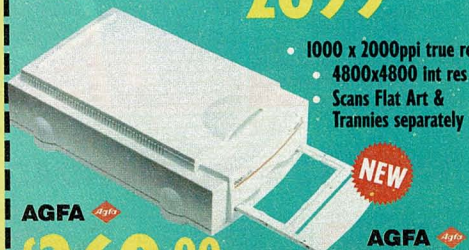

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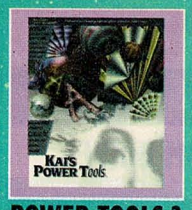

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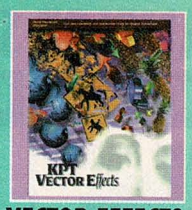

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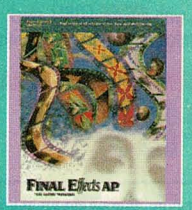

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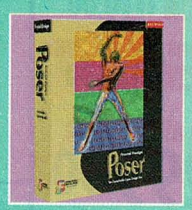

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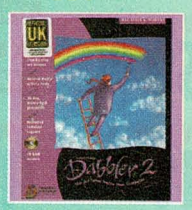

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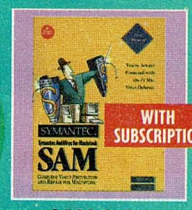

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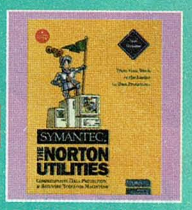

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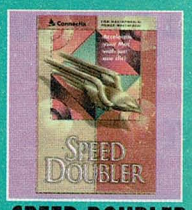

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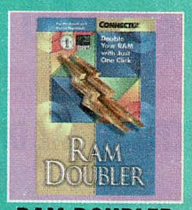

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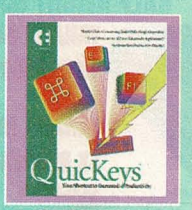

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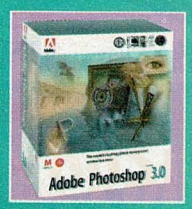

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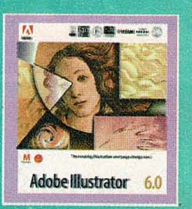

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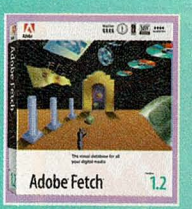

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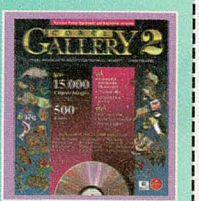

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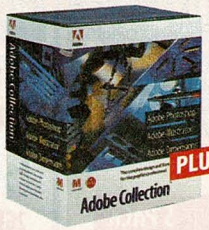

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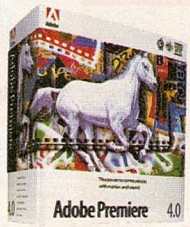

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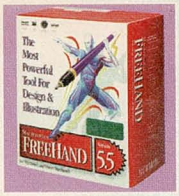

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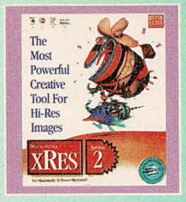

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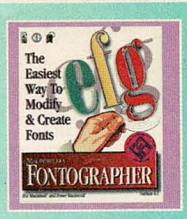

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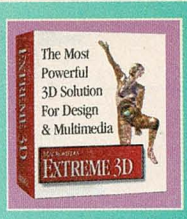

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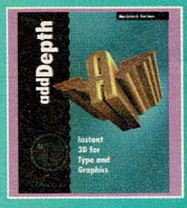

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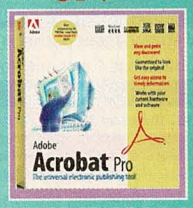
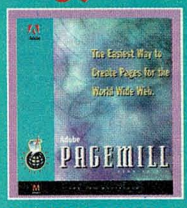


ACROBAT PRO 2.1
£265.00

EXCHANGE 2.1
£89.95
WORKGROUPS
£795.95

CAPTURE (WIN)
£499.00



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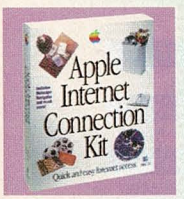

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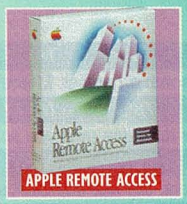

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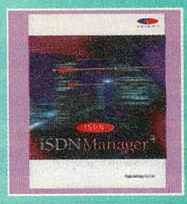

4SIGHT ISDN
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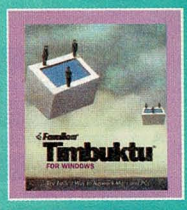

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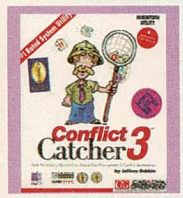
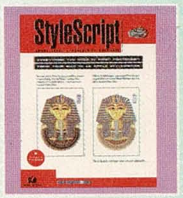


CONFLICT CATCHER
£58.00



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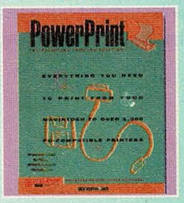

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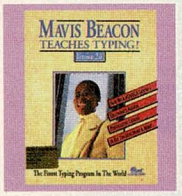

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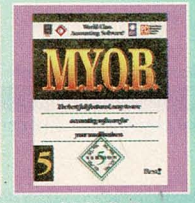

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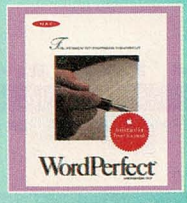

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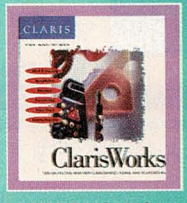

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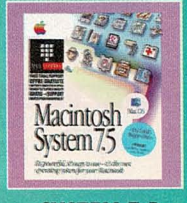
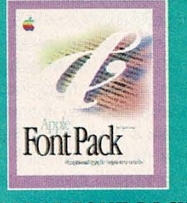


SYSTEM 7.5
£59.00



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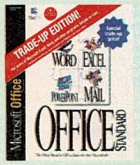
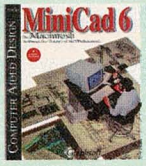


MICROSOFT OFFICE
£198.95

FREEHAND 5.5
£124.95

KAI'S 3.0
£49.95

FILEMAKER PRO 3.0
£89.00



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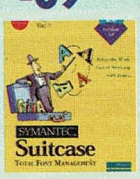

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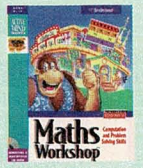
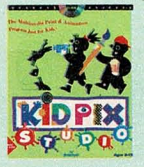


MATHS WORKSHOP
£29.95



KIDPIX STUDIO
£39.95

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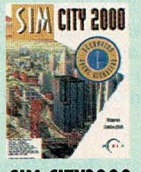

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Product News continued

The Tomy **ComfyKeyboard** is aimed at two to six year olds and has just 20 brightly-coloured keys, a roller and a telephone. It also comes with two educational programs for tots, with a further four aimed at older kids all priced at around £30. As your child grows it can learn to interact with the **Comfy-Land characters** and control the software easily with the simple keyboard.

The ComfyKeyboard will cost around **£70**, including your first two programs. For details, call Tomy on **0345 697581** (from the beginning of November).

PowerBooks get MO

Apple has taken the bold step of replacing the 1.44Mb floppy disk drives in the PowerBook 190 and 5300 series with Fujitsu 3.5-inch 230Mb magneto-optical drives. Apple is apparently convinced that MO is the storage medium of the future, offering "the performance of a hard drive, the transportability of a floppy and infinite rewritability". Apple is quoting an expected lifespan of 30 years and a rugged constitution that resists humidity, sunlight and scratching more than CD-ROMs, while being impervious to the magnetic fields that can corrupt data on magnetic floppies.

The **400g drive** is the smallest and lightest MO drive yet, and can read from and write to **128Mb disks** as well as the standard **230Mb disks**. Ideal for transferring huge quantities of data – so long as the other machine is equipped with an MO drive too...

To find out more, call **Apple** on **0800 127753**, or, for more about the drive itself, which is now available as an external unit with a PCMCIA interface, call **Fujitsu** on **0181 606 4464**.

Farcus

The **Corel Corporation** is clearly worried that the lives of office workers are becoming just too dull. So they've released a CD-ROM dedicated to the immensely popular (it says) **Farcus characters**. And all for only **£47**. You can find out more from Channel Market Makers on **01703 814142**.

XTension sets

Studio Box develops ***QuarkXPress* XTensions** and has announced no fewer than ten new plug-ins in four separate SBX packs.

SBX Publishing costs **£295** and ➤

Name	Price	Rating	Reviewed	Contact	Telephone
Excel 5	£220	87%	MF18	Microsoft	0345 002000

The only professional spreadsheet package on the Mac boasts 3D documents, pivot tables and more power than a Saturn 5. Includes outlining, database functions and more.

Expresso 1.0	£20	89%	MF31	Softline	0181 401 1234

Personal organiser that makes up for in charm and value what it lacks in high-powered relational data-handling.

FileMaker Pro 3.0	£234	96%	MF37	Claris	0181 756 0101

MACFORMAT Classic An excellent database that's been tweaked and tuned and is now fully relational. Be very sure you need more power before shopping elsewhere.

Let's KISS	£153	91%	MF41	Softline	0181 401 1234

MACFORMAT Classic As a piece of software design, so far ahead of traditional spreadsheets and feeling so right that you wonder no-one though of it sooner.

Organizer 1.0	£58	84%	MF31	Claris	0181 756 0101

Efficient and elegant (even slightly prim) personal organiser. Effective and affordable, though sometimes confusing.

Rhymes and Cliches	$65	78%	MF37	Eccentric Software	00 1 206 628 2687

A program for finding rhymes and cliches – a daft idea until you actually sit down and use it, when it proves rather handy.

TextBridge Pro	£410	77%	MF41	Xerox	0118 981 4230

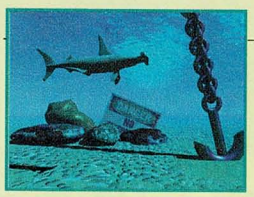
Masses of power and features for serious users, but like any OCR software, it depends on the quality of the original scan.

Up-to-Date & Contact 3.5	£116	89%	MF31	Now! Software	01525 237001

Dynamically-linked duo of contacts manager and diary. Occasionally a little too complex for its own good.

Word 6.0.1	£220	92%	MF20	Microsoft	0345 002000

MACFORMAT Classic The world's favourite word processor has a monumental feature list but a bewildering array controls, toolbars and gadgets that make it feel simply top-heavy. We reviewed *Microsoft Word 6.0.*



Graphics

From image-manipulation to professional illustration to 3D design and raytracing, here's our pick of the top Macintosh graphics packages.

Name	Price	Rating	Reviewed	Contact	Telephone
Bryce 2	£234	93%	MF38	Principal	01706 832000

MACFORMAT Classic 3D landscape creation tool that's more versatile than its predecessor and can create indoor scenes too. Easy (for 3D) and breathtaking.

Dabbler 2	£59	90%	MF35	CU	0181 358 5857

MACFORMAT Classic 'Natural media' painting program for those awed by multi-layered dialogues and complex options. Backed up with lots of CD-ROM resources.

Extreme 3D 1.0	£645	86%	MF39	CU	0181 358 5857

Brilliant bezier modelling, visible light beams and fast rendering. A steep learning curve but good documentation.

FreeHand 5.5	£529	80%	MF33	CU	0181 358 5857

A big step forward from previous versions and still superior to arch-rival *Illustrator.* Some minor gripes remain, though.

Illustrator 6	£376	80%	MF37	Adobe	0181 606 4000

The latest version of this vector-based professional illustration package is nearly on a par with its great rival *FreeHand.*

Infini-D 3.5	£469	85%	MF42	Gomark	0171 731 7930

3D modelling, rendering and animation package that's easy to use but produces rather crude and mechanical results.

Kai's Power Goo	£58	90%	MF41	Principal	01706 832000

MACFORMAT Classic Provides many of the image manipulation tools of professional graphics applications, but is cheaper than many *Photoshop* plug-ins!

LightningDraw GX 1.01	$351	75%	MF36	Lari Software	00 1 919 968 0701

Lots of QuickDraw GX tricks packed into a low-end drawing package that's quirky and somehow dissatisfying.

Live Picture 2.5	£934	85%	MF38	IMC	01344 871 329

A kind of super-*Photoshop* with an unusual interface but excellent compositing. Not as RAM-hungry as *Photoshop.*

Painter 4	£469	91%	MF35	CU	0181 358 5857

MACFORMAT Classic Blends traditional painting tools and media with mouse pointers and bezier curves. Too arty for some, too amateur for others, but we rate it.

PhotoDeluxe	£88	85%	MF39	Adobe	0181 606 4000

Innovate and powerful photo manipulation package at a bargain price – if you've got the hardware needed to run it.

PhotoFix	£122	83%	MF24	Linographic	01252 376103

Photo manipulation software that does less than *Photoshop* but costs less and uses less RAM. Compares rather well.

Name	Price	Rating	Reviewed	Contact	Telephone
Photoshop 3.0	£738	90%	MF22	Principal	01706 832000

MACFORMAT Classic The market-leading professional image-manipulation program. Offers an unrivalled range of tools and plug-in effects, but needs serious amounts of RAM.

Name	Price	Rating	Reviewed	Contact	Telephone
Ray Dream Studio 4.0	£222	89%	MF39	Principal	01706 832000

Easy to use with brilliant modelling and Scene Wizards, but very slow. Clear documentation and a bargain price.

SmartSketch 1.0	£60	89%	MF30	CGS Computerbild	0181 679 7307

Inexpensive vector or bitmap art package that provides many professional effects. A bit of a jack of all trades, though.

StrataStudio Pro 1.75	£1,169	92%	MF34	Principal	01706 832000

MACFORMAT Classic Creates complex geometries resulting in detailed and realistic stills and animations and is at the forefront of 3D software technology.

xRes 2	£645	91%	MF38	CU	0181 358 5857

MACFORMAT Classic Heavyweight graphics package aimed at a market beyond *Photoshop* but using less RAM. Wonderful interface, but no compositing.

Graphics resources

As well as fully-fledged graphics applications, there are numerous sources of royalty-free clip-art for use in your publications or designs. And in addition to the image-manipulation effects available within graphics applications, there are numerous plug-ins for use with *Photoshop* and compatible applications.

Name	Price	Rating	Reviewed	Contact	Telephone
ClickArt famous Mag Cartoons 2	£29	90%	MF34	MacLine	0181 401 1111

MACFORMAT Classic 500 vector-based royalty-free syndicated cartoons for £30? A cracker of a collection containing some good artwork and gags – a real bargain.

Corel Gallery 2	£93	80%	MF34	Channel	01703 814142

15,000 images, 500 fonts & more. A bargain for business users, despite the numerous bad personality portraits.

Intellihance	£128	90%	MF31	Principal	01706 832000

MACFORMAT Classic An "intelligent" *Photoshop* plug-in that automatically sorts out brightness, contrast, sharpness and more in scans. Rather good.

Kai's Power Tools 3	£152	77%	MF33	Principal	01706 832000

A superb set of *Photoshop* plug-in effects with an improved interface. There are still inconsistencies, but this is very good.

KPT Convolver	£152	90%	MF25	Principal	01706 832000

MACFORMAT Classic Excellent image manipulation software that doesn't do anything *Photoshop* can't but does it easier and cheaper. Also includes *Color It.*

KPT Power Photos III	£152	90%	MF40	Principal	01706 832000

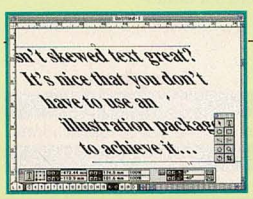
MACFORMAT Classic Five CDs containing 375 photos scanned at ultra-high resolution and prepared for publication. A seriously desirable product.

KPT Vector Effects	£152	92%	MF29	Principal	01706 832000

MACFORMAT Classic Supplies a whole range of spectacular and useful effect for *Illustrator* and *FreeHand* vector images. Easy to use, but some effects are not useful.

Terra Forma	£464	90%	MF36	Andromeda	01235 527303

MACFORMAT Classic Five-CD set of ready-coloured and pre-traced maps either for immediate use or retouching. Gorgeous quality and superb attention to detail.



Desktop publishing

Professional print publishing is still dominated by *QuarkXPress* and *PageMaker,* but this category also includes Web page design, electronic publishing in general, and various publishing utilities.

Name	Price	Rating	Reviewed	Contact	Telephone
BeyondPress 2.0	£570	85%	MF40	XChange	0171 637 2966

Easy to use XPress extension for converting XPress pages into HTML. No support for font tags or frames, though.

Product News continued

includes six plug-ins: *Files XT* is designed for developers integrating *XPress* with other applications, and displays a file palette for keeping track of related files. *Net Document* monitors the use of *XPress* documents available to several users on a network, so that each user can find out if a file is being worked on, and who by. *EPS Selection* makes it possible to create EPS images of items or groups of items on a page. *Find Fillers* helps select fillers, working with existing filler libraries. *Status XT* monitors the status of a document (whether it's an ad or an editorial page, for example), and could prove invaluable in a production environment where several different people will be working on documents. *FitXT* will fit copy into a text box by juggling tracking, horizontal scaling and point size and even sub-editing with a user-defined dictionary. Sounds terrifying.

SBX Bureau costs **£110.** It includes *Net Document* and *EPS Selection* from the publishing pack and adds *SepIT,* which converts all the colours in your documents to process colours. *XPress* can already do this, but Studio Box claims its XTension is more reliable.

SBX Integrators costs **£150** and includes *Files XT* and *Status XT* from the publishing pack, as well as *Page to Pict.* This XTension provides a PICT image of a document for electronic proofing or production control.

SBX Editorial costs **£195** and includes *Fit XT, Page to Pict, Status XT, Net Document* and *Find Fillers.* You can also buy any of the XTensions separately if you wish.

If you want to find out more about these XTensions, call **Studio Box** on **01734 502556**.

PowerMac upgrades

GH GORDON HARWOOD COMPUTERS

If you're anxious to upgrade your PowerMac **7500**, **7600**, **8500**, **8600** or **9500** with a **604e motherboard upgrade** (with speed boosts of up to 200%), you'll be pleased to hear that **Gordon Harwood Computers** has "repositioned" its **Maccelerate upgrade boards** (in other words, they're cheaper). The Maccelerate 150/166 uses a 150MHz 604e chip with 2 x 32K internal cache and will be available for around **£470**. The **180MHz Maccelerate 180** will follow in October at a price of **£590**, as will the **Maccelerate 200** at **£760**. Prices may fluctuate, though, so for up-to-date details you can call **Gordon Harwood Computers** on **01773 836781**.

Final Draft 4.0

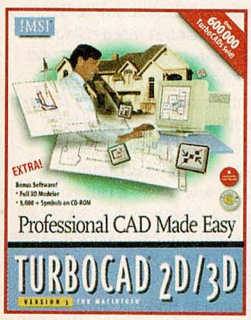
Remember a company called **MacToolkit**? Well forget it again, because it's changed its name to **BC Software**

➤ page 148

Product News continued

Inc. It's also released version **4.0** of its best-selling ***Final Draft*** screenwriting application. Completely rewritten and now PowerMac-native, *Final Draft* is a word processing package with a host of additional features to help **professional screenwriters** concentrate on the creative process rather than fiddling around with industry notation and formatting. You get a spell-checker and thesaurus, drag-and-drop editing, and that's not all. Screenwriting elements include styles for slug lines, action, and dialogue – all parts of a screenplay that have to presented in a precise way. You also get function key shortcuts, automatic page and dialogue breaking, automatic character list creation and single-key name entry, revision marks, page numbering, bookmarks, script notes... it's enough to make you start that play you've always been thinking about. To find out more, you're going to have to call **BC Software Inc** in the United States on **001 310 636 4711.**

TurboCAD



Engineers and designers take note: **IMSI** is now selling a Mac version of **TurboCAD 2D/3D** at **£176**. Including floating tool palettes, associative dimensioning (getting objects to join up properly) and 24 libraries of common CAD symbols, it runs on a **Mac II and above** and doesn't make colossal demands on your RAM. Find out more from **IMSI** on **0181 581 2000**.

High-tech cameras

Nikon has released two new **digital cameras** with an unusual vertical design more reminiscent of mobile phones than cameras. One is a **PC card model** with 480 x 512 pixel resolution – images are stored on a PCMCIA card, which is okay if your Mac has a PCMCIA drive, but a bit tricky if it doesn't. (Luckily, PowerBooks do.) The **Multi-input model** offers 640 x 480 pixel resolution and will download its images onto your Mac via a **cable and software** supplied with the camera. ➤

Name	Price	Rating	Reviewed	Contact	Telephone
ColorDrive	£258	84%	MF35	MacWarehouse	0800 181 .332

Colour calibration for graphics professionals, matching your monitor with CMYK output. Veers towards the complex but could prove invaluable.

HexWeb XT	£410	73%	MF40	XChange	0171 637 2966

XPress extension that's good at converting batches of XPress files to Web pages, but lacks some bells and whistles.

HoTMetaL PRO 2	£116	70%	MF36	User Interface Tech	01223 302041

Good for writing correctly-coded HTML pages and has a thesaurus and spellchecker. Rather tedious and technical.

PageMaker 6	£605	91%	MF32	Adobe	0181 606 4000

MACFORMAT Classic It can do everything that *QuarkXPress* can do at half the price. Text-handling is a bit creaky, but layout and design is clean and simple.

PageMill	£88	90%	MF35	Adobe	0181 606 4000

MACFORMAT Classic At last you can forget about HTML codes and concentrate on designing Web pages. Some tags are missing, but you do get an image editor.

QuarkXPress 3.32	£1,169	88%	MF25	CU	0181 358 5857

The market-leading professional DTP package marches on relentlessly with its excellent text-handling and XTensions. We reviewed *QuarkXPress 3.31.*

UniQorn 1.01	£1,052	80%	MF40	Principal	01706 832000

QuickDraw GX DTP application that does things *XPress* and *PageMaker* can only dream of. Needs hardware power, though and lacks some features.

Internet & Comms

These days communications and the Internet are virtually synonymous – and the latest generation of Web browsers handle e-mail, ftp, usenet and anything else you might want to do on the Net. So which one do you choose, and how do you keep your URLs organised?

Name	Price	Rating	Reviewed	Contact	Telephone
Em@iler 1.0.1	£58	82%	MF42	Claris	0181 756 0101

Neat and attractive e-mail application that handles mailboxes, enclosures and address books painlessly.

Eudora Pro 3	£75	83%	MF42	Electric Mail	01223 501333

Very powerful e-mail application with a new, friendlier interface that doesn't quite hide some murky technical depths.

Internet Explorer 2	Free	78%	MF39	Microsoft	0345 002000

Microsoft's browser isn't as good as *Navigator,* but it is free. Version 3 may narrow the gap when it eventually arrives.

Netscape Navigator 3	$49	94%	MF39	Netscape at http://home.netscape.com

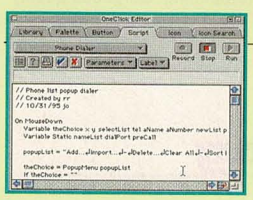
MACFORMAT Classic The world's favourite Web browser may slow up now and again, but does absolutely everything rather too well for comfort. We reviewed *Netscape Navigator 2.0.*

Snap Mail 2 (5-user pack)	£206	90%	MF42	Softline	0181 401 1234

MACFORMAT Classic Simple and fun networked e-mail software that requires no servers, administrators or complex set-up procedures. Perfect for small, anarchic offices.

WebArranger	£81	85%	MF41	CE Software	01277 202450

A personal organiser for Net users with automated downloading, FTP-ing, Web page watching and other clever tricks.



System enhancers

Whatever Apple do to the System and Finder, there will always be programmers who think they've got a better idea – either a quicker, more efficient way of doing something, or an enhancement to the Mac's interface that makes it better-looking, more user-friendly or simply a lot more fun.

Name	Price	Rating	Reviewed	Contact	Telephone
Dogz	£15	72%	MF39	Mindscape	01444 246333

Desktop dog that can learn tricks, attack people trying to open your files and even bark at the moon in screensaver mode.

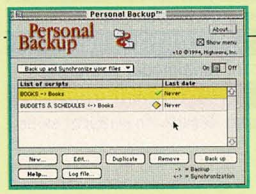
The Little Mac Toolkit	£35	89%	MF28	Addison Wesley	01279 623 623

A disc packed with useful (and not-so-useful) shareware and freeware combined with a very good manual.

OneClick	£89	91%	MF35	WestCode Software	00 1 619 487 9200

MACFORMAT Classic Create floating palettes for launching applications and opening files, and set up short-cut macros for your favourite applications. Real power.

Name	Price	Rating	Reviewed	Contact	Telephone
PopupFolder 2.0	£46	87%	MF35	Softline	0181 401 1234
Hierarchical folder menus up to 16 levels deep both in the Finder and in **Find** and **Save** dialogue boxes. Paradise!					
Quick 'n' Easy	£29	83%	MF30	Now! Software	01525 237001
A trio of low-cost, high-polish utilities including folder and WYSIWYG font menus, and enhanced **Open** and **Save** boxes.					



Security & Diagnostics

You shouldn't be worrying about *if* your Mac goes wrong, but *when.* Problems can be irritating and livable-with, or they can be nightmarish total breakdowns that threaten your business and your sanity. Here are some applications to help you back up your data, prevent unauthorised access and sort out problems when they do occur.

Name	Price	Rating	Reviewed	Contact	Telephone
Conflict Catcher 3	£81	81%	MF29	Softline	0181 401 1234
Automated conflict-catching walk-throughs combine with Extension management that include fonts and start-up items.					
DiskGuard	£105	88%	MF22	Softline	0181 401 1234
Cast-iron password protection system that defeats any hacking tools you try to crack it with. Essential for the paranoid.					
LockSmith	£41	89%	MF22	Hi Resolution	01892 891291
System Extension which uses a private folder for things you don't want other people to meddle with.					
Norton Utilities 3.2	£116	88%	MF42	Symantec	01734 814 230
Superficial enhancements to a dated application that's not even PowerMac-native yet. Still market leader… for now.					
Personal Backup	£46	92%	MF29	Softline	0181 401 1234
MACFORMAT Classic Automated back-up scripts that can run near-invisibly in the background at pre-set times. Can also synchronise contents of folders.					
Retrospect	£222	88%	MF22	Principal	01706 832000
Sophisticated backup application with automated scripts, filters for specific file criteria and other goodies – at a price.					

Music & Audio

The Macintosh has long been one of the mainstays of the professional music industry, and boasts a wealth of high-quality software for MIDI, sequencing, scorewriting, sound editing, and direct-to-disk recording. Here's the software we rate.

Name	Price	Rating	Reviewed	Contact	Telephone
Circle Elements	£30	83%	MF28	Time and Space	01442 870681
Sample-based song construction kit that comes with over 1,000 samples. Great for beginners.					
Cubase VST	£329	94%	MF39	TSC	0171 258 3454
MACFORMAT Classic A major step forward in the development of affordable digital audio software. Packed with features, easy to use and great value.					
Cubasis	£129	81%	MF37	Harman Audio	0181 207 5050
A very capably entry level sequencer with few omissions and a ready upgrade path. A big step up from *Cubase Lite.*					
CyberSound FX	£81	92%	MF42	Adobe Shop	0131 451 6888
MACFORMAT Classic Sound processing and conversion effects supplied as *Adobe Premiere* and *SoundEdit 16* plug-ins, each of which can have several 'templates'. Excellent value.					
Deck II v2.5	£410	84%	MF38	CU	0181 358 5857
Direct-to-disk recording program that also has many uses for multimedia authors and post-production studios.					
FreeStyle	£149	90%	MF22	Music Track	01462 733310
MACFORMAT Classic An excellent introduction to sequencing with some powerful and unique features. Designed more for music makers than technology-junkies.					
Hyperprism (PowerMac)	£266	86%	MF42	Unity Audio	01920 822890
The digital audio equivalent of twiddling the dials on an analogue synthesiser. Different versions for different Macs.					
Logic 2.5	£649	92%	MF31	Sound Technology	01462 480 500
MACFORMAT Classic A high-powered sequencing package with some unique processing and arranging features. One of the most powerful products on any platform.					
Makin Music	£25	89%	MF28	CD Exchange	01603 261060
A CD packed with MIDI files, music modules, commercial demos, general utilities and samples. Great value for dabblers.					
MusicTime	£100	90%	MF27	Arbiter	0181 202 1199
MACFORMAT Classic An excellent budget-priced scorewriter that can use QuickTime's Musical Instruments Extension. The first all-in-one Mac music program.					

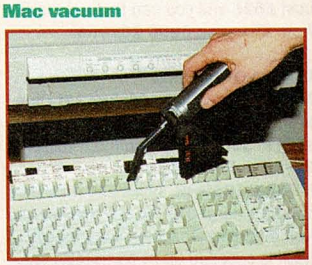
Product News continued

This model enables you to add **sound-bites** or **written notes** to each shot. For pricing (which should be available round about now) or other information, call **Nikon** on **0181 541 4440**.

Accelerate your Mac

Mygate Computing has produced a **clock-chipping accelerator** for owners of **7200/90** and **7500/100** PowerMacs, who will no doubt be feeling especially depressed after MACFORMAT 42's round-up of all the new rocket-powered Macs. Clock-chipping isn't the most reliable form of acceleration but it's quick and easy. Mygate's **HyperSpeed 90** allows variable speed increases via an external dial. Any extra heat generated by the chip should be taken care of by the **high-output fan** you get with the HyperSpeed, which also comes with speed utilities. Call **Mygate** on **0800 132591**.

Mac vacuum



The most irritating thing about Digestive biscuits is the way the crumbs drop down between your keys. It's practically impossible to get them out either with paper clips, ballpoint pens or even cleverly folded wedges of paper.

Hob-Nobs are less of a problem because the crumbs are larger... but the only solution has been to completely dismantle and clean the entire keyboard – the only solution, that is, until now. The **Jessop Group**, best known for its photographic products, has come up with a **mini vacuum cleaner** equally suited to removing tiny fragments of everyday comestibles from your computing equipment.

The kit includes **suck/blow** options, **brush and nozzle attachments**, a **dustbag**, **cleaning spray**, **lint-free tissues** and **cotton buds**, all for only **£9.99**. You can find out more (but not about biscuits) from **Jessop** on **0116 232 0033**.

Video Mac

Desktop video specialist **miro** has teamed up with **Apple** to provide a

➤ page 150

Product News continued

PowerMac **7600/132** bundled with the **miroMotion DC-20 video capture card**. Aimed at people looking for affordable, **entry-level video editing**, the bundle will cost **£4,465** and will be available from specialist dealers **Holdens Computer Services**, **KRCS Group**, **Scotsys Computer Systems**, **Servo Computer Services** and **Trams Limited**. The system will include the PowerMac 7600/132 with DC-20 card, a 6x CD-ROM drive, a 1.2Gb hard disk, 32Mb of RAM, an Apple 1710AV monitor, ***Adobe Premiere 4.2LE*** and free installation. Contact any of the above distributors for more information.

Small Sharp scans

Sharp is confident it's released the smallest **A4 flat-bed scanner** yet. The **JX-250** measures only **28.6cm x 40.3cm** and weighs just **4.9kg**, yet can scan an A4 colour page at 300 dots per inch in just 21 seconds. The machine has a **SCSI interface** plus ***Adobe Photoshop LE***. The JX-250 will cost **£528** and you can find out more from **Sharp** on **0800 262958**.

Microtek scanner

Microtek's new **ScanMaker 35t Plus** is aimed at professionals who need to scan in **35mm slides** in multi-million **30-bit colour**. With an optical resolution of **1950dpi**, slides and negatives can be enlarged to **A4** size without any loss of quality. The scanning process itself is speeded up by Microtek's one-pass colour CD. The ScanMaker 35t comes with ***ScanWizard*** scanning software, a film strip negative holder and a feed for framed slides – plus a copy of ***Color It.*** The price is expected to be about **£820,** and you can find out more from **Computers Unlimited** on **0181 200 8282**.

Tektronix A3 printer

The **Phaser 300x** is the new **A3 solid-colour printer** from **Tektronix**, replacing the 300i. Aimed at design professionals creating proofs and sample layouts, the 300x has **improved colour matching** and can process images up to **50% faster** than its predecessor.

A *Photoshop* plug-in is included to bypass the standard Mac driver and send data to the printer much faster. Solid ink printing technology is similar in principle to dye-sublimation, and is equally useful in publishing environments for accurate colour proofing without the expense of outputting film and generating Cromalins. The 300x costs **£8,807** and you can get more info from Tektronix on **01628 403640**.

➤ page 152

Name	Price	Rating	Reviewed	Contact	Telephone
Overture	£234	90%	MF24	MCMXCIX	0171 723 7221

MACFORMAT Classic Application for converting your MIDI compositions into printed scores in musical notation – essential for communicating with other musicians!

Peak	£399	86%	MF41	Natural Audio Ltd	0181 207 1717

Easy to use, powerful and intuitive digital editing and processing program with well integrated plug-ins – at a price.

Session 2	£175	89%	MF33	Digidesign UK	0800 898 331

Affordable direct-to-disk recording program. You miss out on some features, but it's still up to professional use.

SoundEdit 16 version 2	£410	80%	MF36	CU	0181 358 5857

Edits digital audio and constructs QuickTime audio tracks. Old, but still the best sound editor for multimedia authoring.

Visual Arranger	£39	90%	MF26	Yamaha	01908 366700

MACFORMAT Classic MIDI application for those who want to create a lot of music for relatively little input. Needs no musical skills at all and is fun to use.

Multimedia authoring

As business presentation packages start to offer the features of multimedia authoring kits, and as authoring kits are used more and more by businesses looking for presentations with more polish, the boundaries are becoming blurred – hence the umbrella title "multimedia authoring" used here. This includes animation and video too.

Name	Price	Rating	Reviewed	Contact	Telephone
Amazing Animation	£58	90%	MF26	Claris	0181 756 0101

MACFORMAT Classic Animation tool aimed at kids and which comes with a stock of characters to animate and the ability to add your own via scans. Children love it.

Animation Works	£153	85%	MF26	Gold Disk	01734 814230

Aimed more at youngsters than professionals, but still needs drawing skills and an understanding of cel animation.

Astound	£222	91%	MF36	Gold Disk	01734 814230

MACFORMAT Classic A top presentation tool which makes handling quite complex actions easy. Surprisingly competent at general multimedia authoring.

Digital Chisel HTML 2.1	$159	89%	MF36	Pierian Spring	00 1 800 472 8578

Powerful entry-level/educational package with a simple interface but no built-in script language or multimedia resources. We reviewed *Digital Chisel 2.0.*

Director 5.0	£1,174	85%	MF41	CU	0181 358 5857

A sound upgrade to the industry leader which irons out many shortcomings. It's easier to use, too.

Elastic Reality 1.21	£293	90%	MF26	Softline	0181 401 1234

MACFORMAT Classic Heavyweight morphing application that's more sophisticated than its cheaper rival *Morph* and correspondingly harder to get into.

HyperCard 2.3	£95	79%	MF36	Apple	0800 127753

Authoring bundle built uneasily around the ageing *HyperCard.* With it, nothing is impossible, but few things are easy.

HyperStudio 3.0	£121	88%	MF36	TAG Developments	01474 357350

Practical and powerful tool aimed more at education than multimedia authors per se. More text styling tools are needed.

Kid Pix Studio	£30	79%	MF36	Brøderbund	01429 273029

Fun, imaginative and easy to use, yet limited to basic, though amusing, multimedia tools – top value for money.

miroMotion DC20	£999	81%	MF38	miro UK	01706 832000

Affordable FMV card for PCI Macs aimed at amateur or semi-pros. Professionals will still need to shop elsewhere.

Morph 2.5	£117	84%	MF26	Softline	0181 401 1234

Powerful and enjoyable morphing program at an affordable price. Easy to use, although lacking in professional features.

PROmotion	£149	80%	MF26	Gomark	0171 731 7930

Animation program for serious or professional users and which requires skill and know-how. Can output to videotape.

Scenery Animator	$175	81%	MF26	Natural Graphics	001 916 624 1436

Rival landscape creator to *Vista Pro* which is just about as powerful but includes the ability to create animated fly-bys.

SuperCard 2.5	£333	77%	MF36	Gomark	0171 731 7930

The program that *HyperCard* should have been developed into – proper sound, colour and animation support, yet *HyperCard*-compatible. Price and general support could be a problem.

New !

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Product News continued

Dayna network cards

Dayna's **BlueStreak** Ethernet cards now run six times faster, thanks to newly-optimised drivers for PCI cards and ***Runshare Client 2.0***, now bundled with Dayna's BlueStreak Fast Ethernet cards (NuBus, PCI and LC 10/100 fittings). Prices are **£352** for the **NuBus** version, **£206** for **PCI** and **£329** for **PDS** versions. You can find out more from **Computers Unlimited** on **0181 200 8282**.

Live Picture in XPress

Now that *PageMaker* boasts the ability to access *Photoshop* plug-ins, Dutch company **Live Picture** has announced a ***QuarkXPress* XTension** which enables designers to import high-res *Live Picture* IVUE images into *XPress*. This allows zooming levels of up to 1,200% without pixellation, and the XTension also permits professional separation and unsharp masking, all within *XPress*. ***Live Picture XT*** can handle just about any graphics format, including **TIFF**, **PhotoCD**, **Scitex CT**, **EPS**, **DCS** and **Photoshop**. It should be available soon, although the price was still to be set as we went to press. Contact XChange International on 0171 637 2966.

Medical imaging

Image-Pro Plus is a graphics tool designed for quality control, scientific and medical departments, among others. It has counting, sizing, statistical and image enhancing tools, plus an image gallery. The next time you're down at the police station having your fingerprints checked, they may well be using *Image-Pro Plus*. If your job involves **chemical analysis**, **forensics**, **industrial chemistry** or **materials testing**, you could do worse than call **Data Cell** on **01628 415415**.

Bug Report

Astonishing though it may seem, some software reaches the marketplace in less than perfect condition. It may display irregular behaviour, "undocumented features" or an incompatibility with some elements of the System software. And that's about as nicely as we can put it. In fairness to the programmers, though, it's impossible to test software on every Mac ever made with every combination of System Extensions and hardware upgrades, especially since software applications install proprietary Extensions like rabbits leave droppings.

If there are problems with a piece of software, the chances are someone else knows about it and has an explanation and possibly even a solution. That solution may be simply to upgrade to a newer version of the software, but many manufacturers distribute updaters which will modify your existing application to work properly.

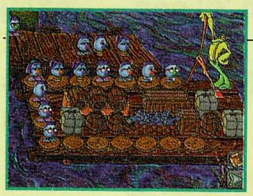
We get our information from the Internet, and that's the easiest source

➤ page 154

Multimedia CD-ROMs

The invention of the CD-ROM has created a whole multimedia publishing industry turning out educational, reference and leisure titles by the score. Here's our list of CD-ROMs that every home should have on its bookshelf. Possibly.

Name	Price	Rating	Reviewed	Contact	Telephone
Ancient Lands	£30	85%	MF38	Microsoft	0345 002000
Entertains as well as educates, and although not a real research tool in its own right it will readily inspire it.					
Cinemania 96	£30	89%	MF36	Microsoft	0345 002000
Typically thorough and well-designed Microsoft encyclopaedia – but would you want to buy the new version every year?					
Encarta 96	£50	83%	MF42	Microsoft	01345 002000
Microsoft's definitive multimedia encyclopedia is bang up to date but the Mac implementation is flawed.					
Encyclopedia of Nature	£40	85%	MF36	Dorling Kindersley	0171 753 3488
Excellent enhancement of the paper-based encyclopaedia but not enough interactive multimedia technology.					
Encyclopedia of Science	£40	89%	MF32	Dorling Kindersley	0171 753 3488
Misses out on cutting-edge whizz-bang stuff like VR, but provides an absorbing background to science in general.					
Encyclopedia of Space	£40	82%	MF42	Dorling Kindersley	0171 753 3488
More illustrations and fewer dry facts would help, but this is an otherwise impressive release that also educates.					
History of the World	£40	89%	MF38	Dorling Kindersley	0171 753 3488
More flashy and inspirational than in-depth and authoritative. Oozes quality but built for browsing rather than research.					
Makers of the 20th Century	£45	89%	MF41	News Multimedia	01525 852 813
200 personalities of the 20th Century are examined and explained in a well-presented and often intriguing CD					
modified: frEQuency	£16	83%	MF40	modified	01225 337992
A kind of multimedia jukebox – an assault on the senses that's actually interactive if you can keep up with the pace.					
MTV Unplugged	£25	88%	MF40	CIC	0181 846 9433
Multimedia database of *Unplugged* performances going back seven years and including interviews, video and set listings.					
Music Central 96	£40	95%	MF40	Microsoft	0345 002000
MACFORMAT Classic *Music Central* is to music what *Encarta* is to the world at large. Typically for Microsoft, very good indeed, with a subscription deal for regular Web updates.					
Passage to Vietnam	£40	88%	MF31	Against All Odds	001 415 331 6000
Based on the book of the same name, a photographic journey that shows a nation both developing and beautiful.					
Quest for Fame	£50	85%	MF40	IBM	01329 242728
Cross between a game and a multimedia celebration of the pop industry that lets you embark on your own quest for fame.					
RedShift 2	£50	92%	MF32	Maris Multimedia	0171 488 1566
MACFORMAT Classic Restrained but magnificent exploration of the universe, hailing originally from Russia rather than the gung-ho States. Utterly definitive.					
Wings: Korea to Vietnam	£40	81%	MF33	BMG	0171 384 7800
Another high-quality database of military aircraft, with all the stats fans could want. No historical perspectives, though.					
Wings: Midway to Hiroshima	£40	86%	MF33	BMG	0171 384 7800
A database of 636 aircraft from World War II, together with 15 virtual planes and five virtual airbases to explore.					
World Reference Atlas	£50	90%	MF37	Dorling Kindersley	0171 753 3488
MACFORMAT Classic Bestrides the Earth like a colossus, giving you the information you need, when you need it. The maps and graphics are mouth-watering.					



Multimedia for Kids

How do you keep the kids entertained on a wet Sunday afternoon in November? How do you justify the purchase of a new PowerMac to your spouse/bank manager/conscience? Multimedia CD-ROMs for kids can entertain, occupy and educate all at the same time. Here are the best we've seen.

Name	Price	Rating	Reviewed	Contact	Telephone
A to Zap	£35	80%	MF39	ABLAC	01626 332233
Excellent sound and graphics, though the letter-teaching routines are a little predictable and some screens are dull.					
Batman Cartoon Maker	£20	83%	MF39	Random House	01621 816 900
Now your kids can create their own cartoon *Batman* movie – if they've got the patience. Well thought out.					
The Cat Came Back	£20	87%	MF35	Eidos Interactive	0121 606 1800
An excellent singalong story for five to nine-year-olds.					
Counterfeit Collaborator	£28	90%	MF35	Sierra	01734 303322
MACFORMAT Classic A genuinely intriguing mystery forms the heart of this Playtoon CD. French imagination and illustration translated into English makes a beguiling combination.					

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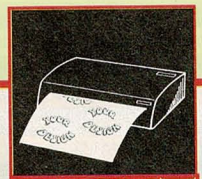

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Bug Report continued

of updaters. We also put updaters on the MACFORMAT Cover CD, though, so check the **Shareware/Updaters** folder each issue.

AppleVision fix

Are you having trouble with your **AppleVision 1710** monitor? Symptoms include crashing if you press the bezel buttons during startup, long start-up times and incorrectly-saved gamma settings when changing colour depth. The latest **driver, version 1.0.2**, should fix these and other problems, and is available from Apple's Internet site at **http://www.apple.com** (head for **Customer Support** and then **Software Updates**, which is where all current updaters are stored).

After Effects 2.0.2

Can't launch the **After Effects 2.0.2 updater** on a **Power Macintosh**? According to Adobe, the updater needs a resource present only on 601-based PowerMacs, so owners of newer **604-based machines** will have to either install the complete 2.0.2 application or upgrade to v3. Visit the **Adobe** site at **http://www.adobe.com** for more.

PageMill 1.0.1

Having trouble with **images** while using ***Adobe PageMill 1.0.1***? The symptoms include dramatic **colour shifts** or **loss in quality** while working with **transparency** or **image-maps**. The solution is the **1.0.2 updater**, available from the Adobe site.

Premiere 4.0.1

Adobe Premiere 4.0.1 has a problem with some versions of **System 7.5.1 –** you get a **System freeze** if the System Update is a beta version. The solution is to get the **version 1.0.2** release of the Update (or update to 7.5.3 using the official UK updater on the MACFORMAT 39 Cover CD), or try deleting the *Premiere* **prefs file** and relaunching the application.

RAM Doubler

Connectix's ***RAM Doubler*** is one of the Mac world's most ambitious and useful utilities. By its nature, though, it does things with memory that can cause problems. These are too numerous (though not necessarily common) to list here, but you can find out the whole story at the **Connectix** site at **http:///www.connectix.com**. Problems include **System freezes** with some combinations of Mac model and System version, and problems with **specific software**, many of which are addressed with the latest updater, available at the Connectix site.

■ We're always keen to hear about bugs and conflicts both from our readers and from any software companies, and we'll be aiming to keep you up-to-date on this important area. In the meantime, if any software publishers out there feel they're featuring too heavily in our bug reports, it may

➤ page 156

Name	Price	Rating	Reviewed	Contact	Telephone
Digby's Adventures	£20	87%	MF35	Eidos Interactive	0121 606 1800
A lovable Yorkshire terrier gets into all sorts of scrapes in this entertaining shaggy dog's tale.					
Dr Seuss's ABC	£30	82%	MF39	Living Books	01429 520250
Lots of animations and things to click on, but an adult is needed to extract any educational value beyond the sheer fun.					
Escape of Marvin the Ape	£20	82%	MF31	Software Warehouse	01675 464 488
A 14-page storybook with interactive animations to be discovered by a roving mouse pointer. Funny and entertaining.					
Fun School Young Scientist	£26	85%	MF42	Europress	01625 859 444
Fun educational package for five to nine-year-olds, with lots of suggestions for out-of-school activities.					
Greatest Toyshop on Earth	£30	88%	MF32	Omnimedia	0181 974 6766
A brilliantly entertaining set of kids' toys in a comfortingly British environment. Something to keep coming back to.					
Great Green Mouse Disaster	£30	81%	MF38	MIP	0345 697008
Can you catch enough mice to make an orchestra? In a kid's world, such a question prompts hours of fun.					
Imo and the King	£35	82%	MF34	ABLAC	01626 332233
A 12-page interactive storybook packed with incidental animations which you can simply listen to or explore yourself.					
Interactive Alphabet	£24	80%	MF39	Channel	01703 814142
Good value, but not much curriculum relevance and even less by way of interaction, despite good animation and design.					
It's a Bird's Life	£20	87%	MF35	Eidos Interactive	0121 606 1800
With 60 pages of story, *It's a Bird's Life* entertains your kids and teaches them something at the same time.					
Logical Journey of the Zoombinis	£30	96%	MF41	Brøderbund	01429 273029
MACFORMAT Classic A well-designed course in mathematical logic for kids that's almost completely disguised as a superb-looking and fun game.					
The Mandarine Prince	£28	88%	MF37	Sierra	01734 303322
A firm favourite in his native France, cub reporter Spirou solves another mystery in this fine title.					
Marty & The Trouble with Cheese	£25	81%	MF37	Maxis	0171 505 1500
Not the best story in the world, but cute characters and microphone rather than keyboard input make this storybook fun.					
Maths Workshop	£30	90%	MF41	Brøderbund	01429 273029
MACFORMAT Classic Teaches maths in the broadest possible sense, with wonderful-looking activities and a good manual. Needs adult assistance, though.					
My First Amazing World Explorer	£30	89%	MF41	Dorling Kindersley	0171 753 3488
Interactive atlas that's pitched at just the right level for younger children, showing the world as a diverse and living thing.					
NN 'n' N Toy Makers	£24	80%	MF37	Channel	01703 814142
Interactive storybook with educational depth, thanks to built-in games and activities built around a simple story.					
PB Bear's Birthday Party	£30	92%	MF35	Dorling Kindersley	0171 753 3488
MACFORMAT Classic Interactive storybook entertainment for three-year-olds which combines fun, learning and real photography in a quality package.					
Peter Rabbit's Numbers	£30	82%	MF41	Mindscape	01444 246333
Not that much to do and a bit repetitive, but a good learning tool nonetheless and quite rewarding for children.					
The Secret of the Castle	£28	90%	MF35	Sierra	01734 303322
MACFORMAT Classic This Playtoon disc is produced to the same high standards as its sister titles, but in this case its value is more entertaining than educational.					
Sitting on the Farm	£20	87%	MF35	Eidos Interactive	0121 606 1800
Make up your own stories and songs with this farmyard-based disc.					
The Stone of Wakan	£28	88%	MF37	Sierra	01734 303322
This Playtoon animated storybook offers one of the most sophisticated tales in the range.					
Talking Stories	£40	80%	MF39	Sherston	01666 840433
Excellent reading aid based firmly around schools, which lacks gloss and does need adult supervision.					
Uncle Archibald	£28	90%	MF35	Sierra	01734 303322
MACFORMAT Classic Another excellent Playtoon about imaginary monsters that come to life. Slapstick chaos is the result. And you can use it to learn French.					
Wild Board Games	£23	88%	MF32	Channel	01703 814142
Five board games for kids, complete with fun cartoon adversaries and readily-available hints. More fun than education.					
Word Stuff	£20	85%	MF39	Centregold	0121 606 1800
Teaches English and explains various everyday situations. An excellent blend of entertainment and real educational value.					

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Bug Report continued

simply be because your software is so widespread and so popular that these things come to light. And we will make every effort to get corroboration of bugs reported – we won't be publicising every problem anyone's ever had!

Mac Diary

Welcome to the section of MACFORMAT that brings you details of Macintosh events, shows, exhibitions and meetings around the country. We're currently canvassing all the major exhibitors to get as complete a listing as possible for the coming months. If you are organising an event you think our readers will be interested in, get in touch with us! In the meantime, here are some major upcoming Mac-related events:

Apple Expo '96

Where: Olympia, London
When: Wednesday 6 November to Saturday 9 November
What: Traditionally the UK's biggest Mac show, showcasing the Net, electronic imaging and, this year, clones!
Contact: Call 0181 390 0203 to pre-register.
Price: Free if you pre-register before Friday 25 October. Admission at the door is £15

Frame Focus Seminars

Where: Venues throughout the UK
When: Running from August 1996 to January 1997
What: Practical demonstrations of Adobe's *FrameMaker, FrameMaker+SGML, FrameViewer* and *Acrobat* applications
Contact: Adobe on 0181 606 4004

Digital Media World

Where: Wembley, London
When: Tuesday 19 November to Thursday 21 November
What: The latest graphics and digital media tools in film, broadcast, print, video and multimedia
Contact: Call 01923 244555
Price: Free if you pre-register before Friday 25 October. Admission at the door is £20

Mac contacts

We always quote list prices in MACFORMAT. For the most up-to-date prices and promotions, contact one of the dealers advertising with us, including:

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Games

As a games machine the Macintosh rivals both the PC and the plethora of whizz-bang plastic games consoles flooding the teen market. The best games tend to be those that involve brains as well as reflexes, and those which absorb you thoroughly into their game-world. Here's our choice of the best recent titles.

Name	Price	Rating	Reviewed	Contact	Telephone
Allied General	£45	85%	MF37	Mindscape	01444 246333

Standard but utterly absorbing hex-based wargame spiced with black-and-white newsreel footage.

Angel Devoid	£40	84%	MF37	Mindscape	01444 246333

Compelling and violent game that's also an interactive movie. Traditional adventure format with an unsettling atmosphere.

Apache Longbow	£45	92%	MF41	Digital Integration	01276 684959

MACFORMAT Classic 3D Gouraud-shaded flight sim with real class and some fairly hefty hardware requirement. Once you've mastered the controls the missions are a joy.

Asterix: Caesar's Challenge	£40	92%	MF36	Infogrames	0171 738 8199

MACFORMAT Classic Great family fun with superb animations and humour and oozing with novelty. Just don't ask awkward questions about long-term appeal.

Buried in Time	£40	87%	MF31	US Gold	0121 625 3388

The sequel to *The Journeyman Project* is as good as the original. It's beautiful, captivating and plays brilliantly.

Colonization	£45	93%	MF32	MicroProse	01454 893900

MACFORMAT Classic The follow-up to *Civilization* is hardly an orgy of state-of-the art sound and graphics, but it is an utterly absorbing simulator with long-term appeal.

The Dame was Loaded	£40	81%	MF40	Philips Media	0171 911 3081

A 1940s America detective game that's actually a lot better than the dismal promotional material would have you believe.

Day of the Tentacle	£40	94%	MF33	Virgin Int. Ent.	0171 368 2266

MACFORMAT Classic A game it's impossible to fault. You'll love it. You'll hate it. You'll want to wring its neck. It's funny, its involving and the cartoons are quite superb.

Descent	£40	87%	MF34	Interplay	01628 423666

Technically superb, ground-breaking game that's thrilling to play. If only it had a bit more gameplay and variety.

The Dig	£45	83%	MF38	Virgin Int. Ent.	0171 368 2266

Wonderful production and mind-bending puzzles wrapped up in a glitzy package that doesn't quite bowl you over.

Doom 2: Hell on Earth	£45	90%	MF31	Virgin Int. Ent.	0171 368 2266

MACFORMAT Classic The blood-spattered violence *Doom* is famous for hides some quite involving puzzle-solving. One of the best 3D arcade games around.

F/A-18 Hornet 2	£69	93%	MF36	Softline	0181 401 1234

MACFORMAT Classic Realistic, absorbing and fun – an instant classic. Imaginative and interesting missions that progress into desperate adrenaline-laced strikes.

Full Throttle	£45	85%	MF37	Virgin Int. Ent.	0171 368 2255

Wonderful to look at and enjoy, but ultimately a portfolio of entertaining cut scenes punctuated by mainly shallow puzzles.

Gabriel Knight: The Beast Within	£45	84%	MF42	Sierra	01734 303322

Interactive movie/adventure game that for once successfully blends video footage with excellent gameplay.

Havoc	£40	82%	MF34	Reality Bytes	00 1 617 621 2500

A motorised shoot-em-up that's fast, frantic and fun if lacking a little in variety. Really needs a PowerMac.

IndyCar Racing II	£17	94%	MF42	Sierra	01734 303322

MACFORMAT Classic Spectacular simulation at its finest, and at a real bargain price. Stunning graphics and attention to detail, combined with responsive cars and ruthless opponents.

Marathon 2	£65	95%	MF35	Softline	0181 401 1234

MACFORMAT Classic A huge game task, addictive gameplay and excellent graphics and sound. What more could you ask for? Well, a lower price maybe.

Panzer General	£45	80%	MF42	Mindscape	01444 246333

Complex and absorbing hex-based wargame with five major campaigns and refreshingly mild hardware demands.

Spycraft	£50	84%	MF39	Activision	0181 742 9400

An involving spy simulator that needs time and hardware. Superb blend of video, arcade sequences and puzzles.

Ultimate Doom	£30	85%	MF34	GT Interactive	0171 258 3791

This full version of *Doom 1* is shaded little by the release of *Doom 2* and is a good buy for budget-conscious blood fans.

X-Wing	£45	90%	MF36	Virgin Int. Ent.	0171 368 2255

MACFORMAT Classic The classic *Star Wars* flight sim finally makes it onto the Mac, together with a facelift and 102 missions. It's good, but needs serious hardware.

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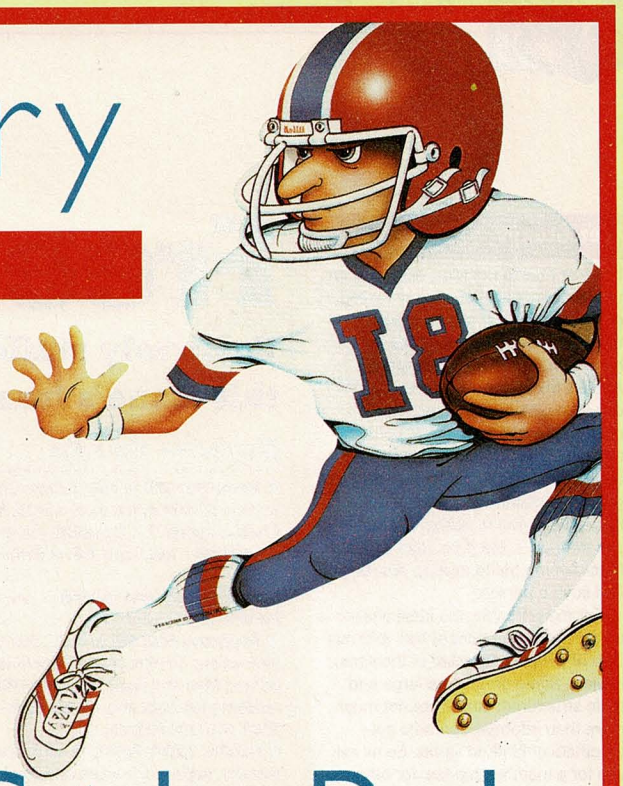

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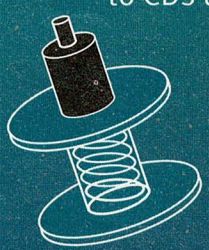

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ADVERTISERS INDEX

.net Magazine	80	Gremlin	119
Adobe	13	Harwoods Computers	27, 29, 61,111
AGFA Gevart Ltd	15	Mac & More	87
Americanino	155	Mac Gold	123
Blue Chip	64	Mac Line	54-57
Call Haven	2, 3	Maris Multimedia Ltd	67
Camelot	142-145	Mygate Ltd	74
Casio (A)	19	Performance Direct	136, 137
Computing Plus	155	Platinum Corp Business Systems Ltd	85
Creative Media Productions	157	Rocky Mountain Traders Ltd	155
Dabs Direct	88, 89	Samsung	7
Dorling Kindersley	106, 107	Sherston Software Ltd	111
Electricmail Ltd	97	Sierra	121
EMAP Computing Ltd	23	T3 Magazine	119
Emerald Creative Technology Ltd	112, 113	The Mac Zone	72, 73
Frontline Distribution Ltd	163	Time & Space	114
Gasteiner Technologies Ltd	93	Tomy UK Ltd	111

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User Groups

If you're new to the Mac, exploring an unfamiliar application, or just having problems with any aspect of your machine, there's no substitute for hands-on, face-to-face assistance. Apple's telephone Assistance Centre can help with hardware or System problems, and a software supplier's technical support line can be invaluable, but there's no doubt that the best guide is someone who's been there, knows what you're facing and can lead you through it. But if you don't have a Mac-owning friend nearby, how do you find such a person?

For many people, the ideal answer is a user group – a more or less informal club of people interested in the same subject. Some groups are large and quite structured; others are not much more than informal, sporadic get-togethers of kindred spirits. Some ask you for a membership fee; for others, the price of admission might be no more than standing your round at the bar. Particularly in the case of special interest groups or those dedicated to particular software applications, they can be some of the best sources of information, advice, and help.

Bear in mind that many groups are run by enthusiasts as a hobby in their spare time, so you can't always expect to be able to call for instant help as you might call a software supplier's technical support service. Some groups simply meet every now and then in a local pub to swap experiences; others even publish regular newsletters containing news, bug reports and helpful advice. As with many things in life, you often get out of them what you put in.

Over the next few pages, we've included lists of UK user groups, together with contact names and telephone numbers. We want to make this a regular feature of this section, so if you want to publicise your own user group, send us a letter explaining what it's about, where you meet and whom interested readers should contact.

This is a free service for amateur, non-profit-making Mac user groups. MACFORMAT does not endorse or recommend any group and cannot be held responsible for any problems you might suffer as a result of contacting any of the groups listed here.

UK User Group Council list

The UK User Group Council maintains a list of Mac user groups that register with them. If you wish to contact the council, call John McKnight on 0181 314 5555.

Local groups

- **Aston University Mac UG**: Birmingham area. Contact Ray Tier on 0121 359 3611
- **Berkshire Mac UG**: contact Ian Burn on 01734 813669

Free reader ads

Positively stuffed to the rafters with tempting bargains, this issue's free ads has everything you need...

Hardware for sale

- **Performa 475 8/250,** System 7.5.3, keyboard, mouse, manuals – £475; Mac Classic, System 7.1, keyboard, mouse, StyleWriter – £400 ono. Nik ☎ 01635 32053
- Four 1Mb **30-pin SIMMs** – £40 the lot. ☎ 01252 713477
- **Performa 600 CD 8/1Gb,** plus 14-inch colour monitor, StyleWriter II mono printer, Mac and Fax Sportster 28.8bps modem plus *Myst* and *Theme Park* – £700. ☎ 01793 523739
- **LC475, 12Mb RAM,** 14-inch colour monitor, keyboard, mouse and Apple StyleWriter II printer, good condition – £700 ono. Amanda or Jason, Hemel Hempstead. ☎ 01442 256364
- **Quadra 700, 20/700,** Apple 17-inch Trinitron Multiscan monitor, extended keyboard, boxed with original software and manuals, as new – £950. ☎ 0181 992 2444
- **Psion to Mac link,** boxed with software, manuals – £50. ☎ 0131 447 8624
- Modem, **US-Robotics Mac and Fax Sportster** 14.4bps, includes comms software, boxed, excellent condition – £85. ☎ 0121 449 8433
- **Radius Video Vision Studio** 2Gb disk array inc. software, many extras; Quadra 950, 36Mb, 20-inch monitor, 2Gb disk array, Wacom tablet, many extras. ☎ 01778 344771
- **External SCSI drives** for Mac Plus, SE, SE/30; also Mac SE and SE/30 analogue m'board and other spare bits, no screen, all very good condition. ☎ 01480 406415 (eves)
- **Quadra 660AV 16/530/35** CD-ROM drive, 14-inch AV monitor, System 7.5.3, *Plain Talk* etc, mint – £1,200. ☎ 01803 864033
- **LCIII 12/80,** extra VRAM, FPU, System 7.1 – £400, or £500 with 14-inch Performa Plus monitor, good condition. Richard, Sheffield ☎ 0114 266 4539 (eves)
- **Monitor 14-inch Apple** with simple intermittent fault, 18 months old, tube good – £50. Coventry ☎ 01203 317951
- **LC III 8/80,** FPU, extended VRAM, 14-inch Trinitron monitor, double-speed CD-ROM drive and loads of software – only £700 ono. Andy ☎ 0151 728 8688
- **KM30 Joystick** – £15, mint condition, boxed with manual, brilliant for most games. Chris ☎ 0151 677 3973
- **US Robotics Mac and fax** 14.4bps fax/data modem, all software, manuals, only used once – £75. ☎ 01703 3255424
- **44Mb Syquest drive** and four cartridges – £90. Paul, Bournemouth. ☎ 01202 302696
- **Internal modem** for Performas, fits 630, 5200, 6200, 5300 etc. 14.4bps fax and data ansaphone and voicemail – £50. Don ☎ 0181 386 2567 (eves)
- **PowerMac 6100/66 8/250,** DOS card (8Mb), CD-ROM drive, complete, boxed as new – £500 no offers. ☎ 01375 360131 (after 6.30pm)
- **LCII,** home use, upgraded RAM, System 7.1, keyboard, mouse, CD-ROM drive, software, new monitor, excellent condition – £650 or without monitor – £400. Andrew ☎ 01506 630258
- **Powerbook 540L 8/160** with case, little used – offers around £900. Cambridge ☎ 01223 514302
- **LC 4/40,** 12-inch colour monitor, keyboard, mouse – £265. Slough ☎ 01753 643309
- **StyleWriter 1200,** brand new, never used – £75; ImageWriter – £45; Apple CD-ROM drive includes *Atlas Grolier* – £70. Sheffield ☎ 0114 288 5265
- **LCIII 8/160,** 14-inch colour monitor, keyboard, mouse, System 7, CD-ROM drive – £750. Cumbria ☎ 01228 57466
- **PowerBook 540C** 20/500, hi-res screen, modem, System 7.5, all software installed, as new – £2,350. Dan ☎ 0171 482 0610
- **Etherport card** out of Mac SE – only £20 ono. Bob, Sheffield ☎ 0114 234 0153
- **Mac IIsi 17/160,** 13-inch Apple Hi-res monitor, extended keyboard, mouse, microphone, System 7.5.2, more stable than my new 7200 – £475 ono. Dorset ☎ 01202 517262
- **Apple multiple scan 15-inch display,** brand new in unopened original carton, unwanted item from special offer bundle – £200. ☎ 01282 773868
- **LCII 4/40,** monitor and modem plus loads of extras – £400 ono; also 4.4Gb Fujitsu hard disk – £500 ono. Jason, Northampton ☎ 01604 604659 (after 5pm)
- **Mac IIci 20/80,** 21-inch Radius colour monitor inc. card, anti glare screen, keyboard, mouse – £450. Tim ☎ 01543 413453 (work) or 01889 585744 (eves)
- **Macintosh PowerBook 160,** 640x 400 b&w screen, monitor outlet, 4Mb RAM, 40Mb hard disk, all accessories, inc. battery. Little used – £500; Macintosh 14-inch monitor, excellent condition, hardly used, complete with cables – £200. ☎ 01903 762846
- **Classic II 2/40,** System 7.0.1, *Word 5.1a, v6 Converter, Minitab 8.2,* programmers, simulators, games, *MacDraw II,* keyboard, mouse, good condition – £275. Christopher, Slough ☎ 01753 732590
- **Quadra 660AV,** no instructions, 14-inch colour monitor, keyboard, mouse, HP660 printer, lots of software, books; also Performa 6200 CPU, 24Mb RAM, TV/video, but no floppy drive, good working order – £800 the lot. Geoff, Bradford ☎ 01274 561212
- **LC 475 8/160,** 1Mb VRAM, 14-inch Apple colour monitor, keyboard, mouse, boxed with manuals, System 7.5, many extras, home use only – £750. ☎ 01795 873849
- **Quadra 660 AV 12/250/CD,** keyboard, mouse, RGB monitor, DeskWriter 550C, *Illustrator, XPress, Office,* AV software, *Xplora 1, Syndicate, Iron Helix* and more – £875 ono. ☎ 0181 287 7591
- **Umax PowerLook colour scanner** without adaptor, *Photoshop Deluxe FE, OmniPage,* all manuals unused, less than 20 hours usage, costs £2,000 – any sensible offers. ☎ 01582 22906
- **PowerMac 7100/66** 48/540, CD, Umax scanner, Epson Stylus 720 x 720 printer, 17-inch Multisync monitor, excellent condition, boxed, manuals – £1,800 collect. ☎ 01822 840549 (eves)
- **Cables:** SCSI 50/25 1m, new – £10 ono; SCSI 50/25 2m, used – £10 ono; Power extension – offers; also – Mac SE 4/20, keyboard, mouse – very good condition – £250 ono; dead Rodime 46M HD free to Mac necrophiliac. Alf, Blackpool area ☎ 01253 896890
- **Apple Personal Communicator Kit** (Performa), new with manuals and software, v2.1.4 (not boxed), 14.4bps – £60. York ☎ 01904 422822
- **Performa 475 4/500,** 15-inch Multiscan monitor, keyboard, mouse; also Hewlett Packard 560c colour printer, as new condition – offers. ☎ 0115 953 1168 (after 6pm)
- **PowerMac 7200/90 8/500 CD,** 17-inch monitor, keyboard, mouse, HP320 DeskWriter and colour & b/w cartridges, Epson GT9000 scanner and software, all boxed, excellent condition with guarantee – £1,950 ono. ☎ 0171 231 5941
- **Apple printer cable** – £6; SCSI cable – £6; keyboard cable – £5; terminator – £6; or £20 for the lot. ☎ 0181 552 8990.
- **Apple LocalTalk card** for networking Image Writer II or LQ printer, new, never used – £40. ☎ 0181 548 0403
- **LC 6/40,** Apple 12-inch colour monitor, keyboard, mouse – £465 ono. Jamie ☎ 01462 481792 (days) or 01462 742447 (eves)
- **PowerMac 7200/90,** 16/1Gb, quad-speed CD-ROM drive, keyboard, 15-inch monitor with software, *RAM Doubler, SoftWindows.* New and boxed – £1,700. ☎ 01245 601903
- **LCIII 8/80,** System 7.1, 14-inch colour monitor, keyboard, mouse, manuals, StyleWriter II, *Microsoft Works,* excellent condition – best offer over £700 secures. ☎ 0151 334 6760 (after 6.30pm)
- **Spigot Power AV NuBus video card** for 660, 840AV, JPEG Print to Tape 16-bit sound – offers. Kostas, Jon ☎ 0181 876 1614 (eves)
- **LC475,** 14-inch colour monitor, keyboard, mouse, incl. System disks and manuals, excellent condition – £700 ono. Tamsin or Darren, Ipswich ☎ 01473 215203 (eves)
- **LCII 8/80,** System 7, original software, disks, manuals and packaging, CPU only for sale due to upgrade, light use only – £300. Pat ☎ 01223 366606
- **Performa 630 8/250,** Performa Plus screen, keyboard and mouse, 14.4bps modem, Apple TV/video system, chip, printers, for more info please fax – whole set only £1,500, great bargain. Fax Denmark, 00 45 33 32 52 61
- **Mac IIci 64/250,** extended keyboard, two-button mouse, 21-inch monitor – mono high resolution, System 7.5, *PageMaker 5, FreeHand 3.1,* SyQuest 44Mb – £850 ono. ☎ 01920 420469
- **PowerBook 5300 16/500,** 100MHz Power PC, plus Global Village 14.4bps modem (PC card type), incl. some

software, immaculate, four months old – £1,200 ono. Mark ☎ 01923 448606

■ **Mac IIci 5/80,** CPU only, incl. cache card, keyboard, mouse, System 7.1 – £350. ☎ 01352 740694 (after 6pm)

■ **SIMM chip,** 1Mb x 32, AppleMac – offers. ☎ 0181 361 2039

■ **PowerMac 7500/100 16/500,** quad-speed CD-ROM drive, System 7.5, 15-inch colour Multiscan monitor, keyboard, mouse, boxed, manuals, *RAM Doubler* installed – £2,000. Karen ☎ 0181 567 3779 (eves)

■ **Logitech Scanman 2.1,** 16 greyscale scanner and software, boxed with manuals, immaculate – bargain at £70. Richard ☎ 01494 763774

■ **Performa 630 CD 16/250,** 15-inch monitor, HP560c printer with Motorola 3400 modem, all have cables, keyboard, mouse – £650. Nik, Northwood ☎ 01923 822519

■ **Mac SE/30 4/40,** keyboard and mouse, home use only, excellent condition – £325. Chris ☎ 01684 562564 (days) or 01905 29601 (eves)

■ **Quadra 610 8/160 CD,** Sony Trinitron monitor, StyleWriter II printer, *ClarisWorks 2,* keyboard, mouse, good condition, all manuals, disks, easily upgradeable to PowerMac – £825. ☎ 0181 445 5178

■ **Mac 475 8/250,** 14-inch monitor, extended keyboard, mouse, colour printer, over £300 of software, computer desk (black) all in original boxes – £750 ono. Bristol ☎ 01275 544325 (after 6pm)

■ **16Mb DIMM** – £75 inc registered delivery. ☎ 0191 273 6687

■ **4Mb 72-pin SIMM,** out of a Performa 630 – £40 ono. ☎ 01954 718879

■ **Supra Express 28.8bps modem** with *Faxcillitate* fax software – £120 ono; also Apple Personal Modem, 14.4bps with fax and telephone software – £79 ono. ☎ 01524 35262

■ **PowerBook 520 4/240,** System 7.5, *ClarisWorks 3,* and a case, as new – will accept £800 with a StyleWriter 1200. Robert ☎ 01523 122231

■ **GCC Colortone** dye sublimation machine – £1,500 or nearest offer. ☎ 0131 669 8418

■ **Sony CD-ROM,** internal, quad-speed, six months old, *Software Spot* CD, unused, half-price – £75. Coventry ☎ 0831 211410

■ **LC475 8/80,** keyboard, no monitor, Apple IIx 8/80, 2-3 COM Etherlink NB cards, 2 Ultra Mac II v1.0 Taxan cards, Radius 20-inch monitor, needs attention – £500 the lot. ☎ 0151 648 5804

■ **1Gb external hard drive** – £225 ono; Performa 400 10/40, 14-inch colour monitor, keyboard, mouse, *ClarisWorks,* all boxed as new – £525 ono; Apple CD300E as new – £150 ono; Hewlett Packard DeskWriter C, black and colour printer, boxed, as new – £275 ono. Haydn ☎ 01202 517696

■ **SIMMStack** 72-pin SIMM socket doubler, plus 72-pin 4Mb SIMM, adds 4Mb RAM to 630/8Mb Mac and PC-compatible – £45 plus postage. ☎ 01704 550221

■ **Power Macintosh 7100/66AV 72/500,** 256K cache, double-speed CD-ROM drive, 14-inch monitor, mouse, keyboard, System 7.1, boxed – £1,375. John ☎ 0113 239 0880

■ **LCIII 4/160,** Apple 14-inch monitor, keyboard, external CD-ROM drive, home use only – £650 ono, buyer collects. Enfield ☎ 0181 367 2511

■ **LC630 8/350 CD,** 14-inch audio-visual monitor, keyboard, mouse, cables, manuals, boxes – £800. ☎ 01278 732483

■ **StyleWriter 1200,** excellent condition, boxed, incl. all manuals and disks, new ink cartridge – a great buy at only £120 ono. Jennifer, Stamford ☎ 01780 63293 (eves)

■ **Mac SE 4/40** with keyboard and mouse – £175; Classic 4/40, keyboard and mouse – £225. Slough ☎ 01753 643309

■ **Radius extended keyboard,** US English for PowerMac 7200, 7500, 7600, 8500, 9500, brand-new, still boxed – £30. Bjorn, Norway ☎ 00 37 04 37 14 or e-mail **bos@pmddata.no**

■ **Professional PowerMac** 8500/120 tower, 16/2Gb, 16-bit sound card, quad-speed CD-ROM drive, 64-bit VRAM, graphics and more – £1,695. ☎ 0116 2432092 (eves)

■ **Power Macintosh 8500/120,** quad-speed CD-ROM drive, 604 RISC processor, 2Gb hard drive, RAM expandable to 512Mb, 64-bit VRAM graphics, boxed – £1,750 or part-exchange. ☎ 0860 322309

■ **Performa 6200,** 16/800, CD-ROM drive, modem, 14-inch monitor, as new – £1,200 ono. ☎ 01535 654341

■ **PowerCenter 604/120,** PowerPC, 8/850 4x CD, System 7.5.3 software, desktop 16-bit stereo in and out, fully extended keyboard, mouse – £1,700 ono. Gerry ☎ 0171 703 7133

■ **Performa 475 4/250,** keyboard, mouse, Performa Plus monitor, System 7.5, *ClarisWorks,* CD300e+, all manuals, six months old, never used, still boxed – £600 ono. Grant ☎ 01674 830456

■ **Classic II and LCII FPUs** – £15 each; Nubus Ethernet board, as new, boxed – £25 or offers; Caere *Typist* scanner and OCR, inc. SCSI cable, software, box and instructions – £25. Coventry ☎ 01203 673963

■ **Quad-speed CD-ROM** and US Robotics 14.4bps modem, both very new and complete with all software – only £110 each or £200 for both. Mark ☎ 01483 572401

■ **Performa 630 12/350 CD,** TV/video-in, System 7.5.3, 15-inch Multiscan monitor, keyboard, 14.4bps fax modem, boxed, lots of software – £1,100. Andrew ☎ 0181 893 4563 or pager 0839 495673

■ **2 x 1Mb SIMMs** – £10 each; 2 x 256K SIMMS – £5 each; 256K VRAM for LC – £10. Luke ☎ 0191 265 4863 (weekends only)

■ **Focus Ethernet card** for Centris 610, never opened, still in box – £45; Colour StyleWriter 2400, plus two extra colour ink cartridges, under one year old, used very little – £190. ☎ 01376 571751

■ **Futura MX** accelerated 24-bit NuBus card, 1,024 x 768 pixels. John, Dublin ☎ 00 353 1 668 7764

Software for sale

■ ***Marathon,*** *Ultimate Doom, Flashback, SimCity 2000, PGA Golf, Daedelus Encounter, Fury of the Furries* plus others, all boxed – £10-£20 each. Mike ☎ 01243 583884 (after 6.30pm or weekends)

■ ***RAM Doubler*** and *Now Utilities,* boxed and unregistered – £30. Slough, Alan ☎ 01753 574180

■ ***Microsoft Art Gallery,*** box unopened, unwanted gift – £17 or swap for *SimCity 2000.* Will consider other *Sim* game. Tim, Oxford ☎ 01865 61846

■ ***Apple Connection Kit CD,*** boxed, manual, unregistered – £40 ono. Richard ☎ 01424 439583

■ ***Star Trek: TNG – Final Unity,*** original CD, boxed, mint condition, includes all instructions plus strategy guide costing £15 – £35 for both. Nick ☎ 0161 748 3444

■ ***MacTools 4*** – £30; *Clip Art for Kids (WordPerfect)* – £15; *Flashback* – £12; *Kyrandia Book 1* – £12. Marie ☎ 01868 725342

■ ***TouchBase Pro*** and *DateBook Pro,* award-winning personal information manager software, boxes and manuals, unregistered – only £25 incl. postage. Rich ☎ 01494 763774

■ ***Myst CD*** – £25 ono; *Daedalus Encounter* triple-speed CD – £15 ono; *Rednex* CD – £15 ono, all new, unregistered. Alf, Blackpool area ☎ 01253 896890

■ ***Marathon CD*** – £20; *Prince of Persia 2* – £15. Tom ☎ 01904 634166

■ **Think C** programming course discs, plus manuals – £60 ono; *FoxPro 2.5* complete – £50 ono; *RAM Doubler* – £25; also Classic II – £300 ono. ☎ 01633 864672 (eves)

■ ***Doom II,*** *Marathon, Myst, Discworld, Links Pro* and other games – £15 each. ☎ 01247 460339

■ **CD-ROMs for sale.** *The Way Things Work* – £25; *Rednex* – £12; *Daedalus Encounter* – £15; *Making Music* – £10; *Grolier Encyclopedia* – £30. ☎ 01524 35262

■ ***On-Line Bible Deluxe*** **CD-ROM,** RRP £99.99 – will accept £35 for original disk. 30-50 CD-ROMs, mostly MacFORMAT – all originals and in their cases – any offers, leave your name and number on pager. Robert ☎ 01523 122231

■ ***Macromedia Extreme 3D,*** unwanted prize, unopened – £250; 2 x 1Mb 30-pin SIMMs – £25. ☎ 0171 278 3816 (pms except Wednesday)

■ ***SoftWindows 2.0*** – £90; *SoftWindows 3.0* – £130; *Speed Doubler* and *RAM Doubler* – £30; Supra Express fax modem, 28.8bps – £90. Graham ☎ 01703 786327

■ ***SimAnt,*** *SimCity 2000, SimCity 2000 Scenarios Vol 1, Fine Artist* – £20 each; *Daedalus Encounter* – £30 or swap for adventure games. Dave ☎ 01703 325424

■ ***xRes 2.0,*** brand-new, unregistered, surplus to requirements – £200 ono. Tim, Bath ☎ 01225 447083

■ **Mac games.** *Populous* – £5; *A-Train* – £10; *Railroad Tycoon* – £10; *Fury of the Furries* – £8; *Spectre 3 Player* – £15. ☎ 01203 673963

■ ***RAM Doubler 1.5.2*** – £30; *Passport Musictime CD 2* – £65; *Color It! 3.0.4* – £30; *Now Utilities* – £30; *SimCity 2000* – £10; *HyperCard 2.2* – £30; *ClarisWorks* – £5. ☎ 0131 447 5362

■ ***Microsoft Excel 4*** for the Macintosh unregistered, in box with manuals – £40 plus p&p. Andrew ☎ 0181 504 9487

■ ***Syndicate*** – £10 incl. p&p. Robin ☎ 01858 555373

■ ***Theme Park,*** no box, original disks and manual – £20; *Heart of China* RPG – £10, boxed; *FreeHand 4* – £100 ono; *After Dark* – £10; *Suitcase* – £5; *Pyro Screen Saver* – £5; *ATM* – £5; all boxed, manuals and original disks. ☎ 01772 701990 (after 6pm)

■ ***Journeyman Project 1*** and *2, Dark Forces, Burn Cycle, Labyrinth of Time, Daedalus Encounter* and many more – £20 each. ☎ 0131 455 8426

■ **Blackburn Mac UG**: contact Roger Moreton on 01254 670043

■ **Bristol (BAUD)**: contact Malcolm Ingsley on 01454 616846

■ **Cambridge Apple UG**: contact Ian Archibald on 01223 311157

■ **Cancer Research/RMH UG**: contact Raymond Henry on 0181 643 8901

■ **Gateway UG**: Norfolk area. Contact Verne Anderson on 01638 513000

■ **Glasgow Mac UG**: contact Stephen Broadfoot on 0141 339 6646

■ **Herts/Beds Apple UG**: contact Norah Arnold on 01582 573918

■ **Liverpool Apple UG**: contact Irene Flaxman on 0151 928 4142 or 0151 949 0307

■ **London Mac UG**: contact John McKnight on 0181 314 5555

■ **Mac Assist**: Cardiff and district. Contact Nigel Arrighi on 01222 224682

■ **Midapple**: West Midlands. Contact William Watson on 01384 277921

■ **Midland Mac UG**: Worcestershire. Contact Ivan Knezovich on 01299 402631

■ **North West Apple CC**: contact George Evans on 01270 583714

■ **Nottingham Mac UG**: contact David Nicholson-Cole on 0115 945 5077 or 0115 945 5444

■ **Poole Mac UG**: contact Bob Lister on 01202 684441

■ **S E Essex Mac UG**: contact Michael Foy on 01702 468062

■ **Southampton Mac UG**: contact Clive Marklow on 01703 293453

■ **Southern Mac UG**: Salisbury area. contact Roger Ford on 01722 780102

■ **Southwest Mac UG**: contact John Elver on 01272 693119

■ **Staffordshire Poly Mac UG**: contact Mark Stiles on 01785 52331

■ **Sussex UG**: Hastings & E Sussex. Contact Garry Nevin on 01424 714110

■ **West Midlands UG**: contact Danny Torbica on 01902 336172

■ **Yorks & Humberside Mac UG**: contact David Vardy on 01423 358853

Thematic user groups

■ **BAPC (Printers)**: contact Derek House on 01228 513621

■ **Christian Mac UG**: contact Paul Wareing on 01789 490153

■ **Corel Draw UG**: contact Jill Foster on 01509 415101 or 01509 620442

■ **Developers UG**: contact John French on 01895 672654

■ **HebreWare**: contact Mendy Scharf on 0181 802 6143

■ **Helix UG**: contact John Sandell on 01763 273379

■ **Independent School UG**: contact Ian Carter on 01252 512151

■ **LAW Mac UG**: contact Charles Christian on 01379 88518

■ **Lisa Users Group UK**: contact Sheila Bell on 01367 710453

■ **MacBaud**: call 01685 58027

■ **MacLaw**: contact Nicholas McFarlane-Watt on 01865 784777

■ **Medical UG**: contact Keith Davey on 01836 348284

■ **Microsoft UG**: contact 'Enquiries' on 01252 834995

■ **Multimedia UG**: contact Richard Hurley on 01273 834588

Thematic user groups cont.

- **Newton MessagePad West Yorks User Group**: contact David on 0113 278 0691
- **PageMaker UG**: contact David Foster on 01509 415101
- **QUAD Club (QuarkXPress)**: contact Philip Caplan on 0181 523 4233
- **School Mac**: Gloucestershire. Contact Bill Henley on 01453 825422
- **School Mac UG**: Cambridge. Contact Derek Smith on 01945 584146
- **Special Needs UG (SNUG)**: contact Geoff Hughes on 01744 24608
- **Strata UG**: contact Roger Harris on 01227 369689
- **The British IIGS UG**: contact Peter Stark on 01223 838231
- **Young Mac**: call 01795 535472

Others

Advertise your own user group here. It need not be formalised or registered, but must be a bona-fide non-commercial user group – just send us your details on the form below or in a letter!

- **Artists archive and news service**: contact The Research Station on 0181 778 6547 (24 hours) 38.4bps plus Web site at http://www.metamute.co.uk/r_station
- **MacLin, E-lans MUG**: meetings every other Tuesday, bimonthly newspaper, for information call +46 (0) 141 220330 or e-mail omar@motala.mail.telia.com
- **MacHelp**: non-profit helpbank for all your Mac problems. Write to us at: MacHelp – Hermelynster 10, B2610, Wilryk, Belgium, for advice and shareware.

- ***Marathon II,*** *Descent, Doom II, Buried in Time, Myst, The Dig, Daedelus Encounter, Grolier Encyclopaedia, 3D Atlas, Concertware, The Way Things Work.* Richard ☎ 0181 286 4464 or 0378 345045
- ***Strata StudioPro Blitz 1.75*** – £390; *Specular Collage 1.5* – £50; *MacWrite 2* – £10; *Canvas 3* – £19; *Cricket Graph* – £8. ☎ 01276 62780
- ***ClarisWorks 2.1,*** *System 7.1, Return to Zork, Sim City, Flashback, PGA II, Links Pro* – £10 each or £60 the lot. ☎ 01548 853356

Swap shop

- **4Mb 72-pin SIMM,** will swap for *SimCity 2000.* Paul ☎ 0113 250 6981
- ***SimCity 2000,*** will swap – open to offers. Jonathan ☎ 01353 669708 or e-mail **Jonathan@wfenrd.demon.co.uk**
- **Swap Performa 5200** for 5300, 5320, student in need of better sound quality and speed. Dan ☎ 01624 822224 or e-mail **dan@enterprise.net**
- **Swap a GCC Colortone** dye-sub A4 colour printer in exchange for a newish model Mac, eg Performa 660 AV 12/500, would accept cash offer – £1,100 ono. ☎ 0181 786 8060
- ***Color It! 3.04*** (latest), new, unregistered – swap for *Suitcase/Now Utilities,* MIDI interface or offers. Jane 01737 36475
- **256K VRAM,** swap for *Syndicate* or anything to do with *Star Trek* – sell for £10 ono. Adam, Isle of Wight ☎ 01983 524638

Wanted

- ***Far Side*** **screen saver,** version of *Painter* earlier than 3.1 (for Performa 600 CD 20/230). ☎ 0181 651 5523 or e-mail **philip@medart.u-net.com**
- **Software driver for CD-ROM,** also System 7.5 disks. If you can help call Wrinkly ☎ 0121 743 3828
- **QuickTake camera,** PowerBook accessories, battery charger, SCSI video cable, external floppy drive, mini dock, keyboard, mouse. Dianne ☎ 0181 514 5150
- **Apple keyboard,** mouse, colour monitor and 600dpi laser printer required. ☎ 0181 548 0403
- **Graphics/AV card** for PowerMac 6100. ☎ 0181 547 1310
- **ClarisWorks 4.0.** Southampton,Tony ☎ 01703 223505
- **DOS card for Performa 630** needed for Open University study. Gerry ☎ 01232 763858
- ***Syndicate*** or *Sensory Overload* on disk – for a reasonable price. Jo ☎ 01636 605289
- **LC accelerator:** DayStar universal power cache, Speedster 68040 or Thundercache Pro (Thundercache preferred), new or used, will grab with both hands. ☎ 01635 866484
- **SP remote Peavey** DPM-SP Sample Editor for Mac/PPC; also Native PPC C++ complier. James ☎ 0181 740 0906
- **PowerMac 6100/66 AV card,** plus fitting adaptor. Urgent! Mark ☎ 01504 398846 (eves)
- **Poor student** living on the "Somerfield Basics" range needs issues of MACFORMAT that contain educational multimedia reviews to help with thesis. ☎ 01934 876344
- ***Freedom of Press.*** ☎ 0171 278 3816 (pms except Wednesday)
- **Hard disk,** must be SCSI, anything considered in the 250Mb to 1Gb range, no bad sectors please. David ☎ 0181 447 5362
- **Shareware for swapping,** send lists/disks, replies worldwide welcome. Write to: Mr L Hill, 28 Rookery Road, Innsworth, Gloucester, England GL3 1AT
- **PowerMac 7100 monitor** (cable) adaptor in order to couple up second monitor, must be in very good condition. Jane ☎ 01737 361475
- ***F/A18 Hornet 2*** – under £20; *Links Pro Golf* – under £20; *Wolfenstein 3D* – under £15; *Speed Doubler* – under £20. Paul ☎ 01592 721681
- **StyleWriter printer** for Classic, either I or II, private purchase please. ☎ 01794 884454
- **Newton carry case** and Newton cradle/re-charge, must be for Newton 130. ☎ 01992 509755 or **tim@xnet.co.uk**

Books and magazines

- **Latest** ***Inside Macintosh*** by Addison Wesley and *Apple: Overview, Memory, Processes* – £15; *QuickTime,* Files – £20; *Toolbox Essentials,* Text – £25. ☎ 01293 782618
- **MACFORMAT** and *Mac Action,* last 12 copies of each including CDs – bargain at only £45 the lot. ☎ 01483 572401 (eves)
- ***The Mac*** issues Feb-August 1996 with CDs – £2.50 each or £15 the lot, would swap for *Grolier* or *Musical Instruments* (Microsoft). Surrey ☎ 01737 361475
- **MACFORMAT magazines,** issues 20 to 40 with CDs, as new – £45 incl. postage. Preston ☎ 01772 691107

Help wanted

- **I need addresses** of where to get PowerBooks on HP. Mark ☎ 0191 273 4772 or 21 Hawthorn Place, Cruddas Park, Newcastle NE4 7HR
- **Mac family in Plymouth area** needs tutor to help us get enjoyment and skills, could this be you? Fee negotiable. ☎ 01752 567048

Miscellaneous

- **Anybody interested** in starting a Mac User Group in Norwich area? Please ring Dave Gudgeon ☎ 01508 492938
- **Mac enthusiasts:** student studying design seeks fellow addicts to share tips etc. Hope to start up Net group if lots of interest. ☎ 01737 361475 or e-mail **jpadginton@worldscope.co.uk**

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MACFORMAT

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The Tiny Zone!

Hello and welcome again to Tiny Zone, the section of MACFORMAT with a small memory nagging at the back of its tiny mind. All this "intelligent agent" stuff sounds oddly familiar. Anyone remember a little utility from about two years ago called *Open Sesame?* It was touted as the Mac's first "learning agent", and it was supposed to monitor what you did on your Mac over a period of time, learn your working patterns and gradually automate them – empty the Trash for you, open your favourite folders at startup, and so on. Problem was, it tended to leap to conclusions – as we put it then: "you do something once and it concludes it's one of the laws of your personal universe." We installed it on Monday morning, and all day it kept interrupting our work with messages like: "I notice you frequently •open "System Folder" •Mondays at 3:42pm. Would you like me to automate this task?" Neural networks, eh? If they learn how *my* Mac works, it'll be, "I notice you unexpectedly quit at 9:03am. Would you lijna¶□IÉ∆u)^•◆Óme?" Come to think of it, there was another great new idea we reported on in the same issue – something called *RAM Doubler.* Now that was just *too* unbelievable. Wonder what ever became of *it?*

Next Issue

Unshackle your Mac!

FREE 100-PAGE "SECRETS OF YOUR SYSTEM FOLDER" BOOK
What are all those files in your System Folder? What do they all *do?* Which ones do you really need, and what should you just trash? All you need to know is here!

Unlock your machine's potential! Discover how to gain more usable RAM and disk space, prevent crashes and run more reliably, without spending a penny! Plus: low-cost ways to customise your Finder and add the features *you* want.

CD-ROM DRIVES

New Macs now come with six-speed CD drives or better, and some multimedia and games titles now require at least quad-speed. If you've fallen behind, or perhaps haven't got a CD drive yet, we evaluate your options and test the latest models.

PLUS Could it be... Is it finally... CorelDraw 6? It is, at last! Was it worth the wait? ■ Pro Pinball ■ What to see at Apple Expo, the UK's biggest Mac show ■ Apple's boss, Gil Amelio, in his own words ■ The definitive buyer's guide and lots more!

MACFORMAT 44 goes on sale on Thursday 24 October. Reserve your copy with your newsagent now, or see page 99 for our special subscription offers

Win an Epson Stylus Color 500 printer

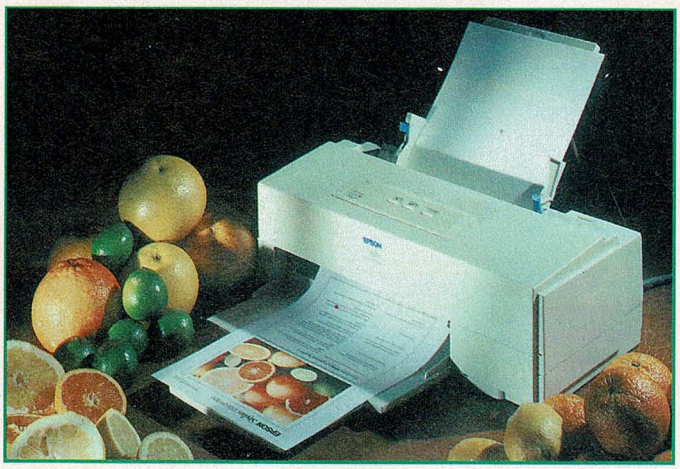
Like a brand new colour printer? We have the very thing – two Stylus Color 500 inkjet printers from Epson, worth £684, just waiting to be given a loving home by our lucky winners.

Epson's Stylus inkjet range of printers is setting the standard for others to follow, and the Stylus Color 500 is no exception. You could be one of two winners of this brand-new printer, which promises to make your whites whiter and your colours brighter.

Replacing the Stylus Color II, the Stylus Color 500 is the complete colour printing solution for both business and home users. Offering superb low-cost, photo-realistic printing, it's the ideal desktop companion for your Mac.

The Stylus 500 can print text and images at an impressive 720 x 720 dots per inch. Epson's *AutoColour* software ensures that the colours you see on your screen match up with what the Stylus 500 produces on paper. *AutoColour* is fully compatible with Apple's *ColourSync 2.0* colour matching system. There are also special facilities to enable you to import images from a digitial camera with confidence.

The Stylus 500 also carefully uses colour half-tones to give incredibly detailed, rich textures and tones. Exclusive MicroWeave inkjet technology makes sure your print-outs don't suffer the "banding" – inconsistent application of ink – that older inkjets often give you.



Producing colour so real you won't believe your eyes, Epson's Stylus Color 500 sets a new standard for colour inkjet printing. And you could own one!

Happily, the Stylus 500 is also easy to operate: built-in software automatically monitors the levels of ink you the printer has left in each colour cartridge, and informs you what your printer is up to. Phew!

The Stylus Color 500 is worth £342, and we have two to be won in our competition. Simply answer the questions below, then send us your answers by phone or mail. See the "How to enter" box for details. The closing date is midnight on Friday 1 November.

The questions

1. Which printer technology does the Epson Stylus Color 500 use to create its print-outs?
(a) Laser
(b) Inkjet
(c) Dot matrix

2. What is the name of Epson's own colour-matching software?
(a) *SuperColour*
(b) *Smashin'Colour*
(c) *AutoColour*

3. Which exclusive system does the Stylus use to avoid banding?
(a) MicroWeave
(b) MicroKnit
(c) MicroScope

The rules

1. You must send us your entry by midnight on Friday 1 November.
2. Employees of Epson, Future Publishing and associated companies, and their agents, together with their families, are not eligible to enter.
3. Multiple entries are not allowed.
4. The editor's decision is final, no correspondence will be entered into and there are no cash alternatives to the prizes.
5. No entries will be accepted unless directed to the phone number or address listed below. **MF**

How to enter

1. Post the coupon at left (or a photocopy) to

Epson Competition, MACFORMAT, PO Box 700, Wellingborough NN8 1CL

2. Alternatively, dial the Epson Competition Hotline:

0891 789 379

(The lines are open 24 hours a day, and your call should take no longer than three minutes. Calls are charged at 39p per minute cheap rate and 49p at all other times. You will have the opportunity to opt out from having your name included on a mailing list.)

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Your answers

1 (circle one) **(a)** **(b)** **(c)**

2 (circle one) **(a)** **(b)** **(c)**

3 (circle one) **(a)** **(b)** **(c)**

To help us improve the magazine, please answer the questions below. You will be entered into the competition even if you choose not to answer them.

Do you already subscribe to MACFORMAT? ❑ Yes ❑ No
Where do you use a Mac most often? ❑ Home ❑ Work
Do you have an Internet connection? ❑ Yes ❑ No

Your answers to the above questions will be used by Future Publishing for internal marketing purposes. All information will be treated under the terms of the Data Protection Act. Tick here if you do not wish to receive details of other offers from Future Publishing or other carefully selected companies. ❑

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When you're surfing the web, using a TelePort Platinum is like doing it in a speedboat. Because it takes full advantage of the PowerPC chip, you really can achieve blistering speeds up to 115Kbps. And for fax communications there are no rivals to the award-winning GlobalFax Software. That's why MacUser magazine gave the TelePort Platinum a full five-mice review - the highest accolade it can award to any product. The reasons are obvious - with the TelePort Platinum you get quality hardware with simply the best fax software available on any platform. And the feature list just goes on and on: free OCR Software, Fax/ARA and Fax/Voice call discrimintation, QuickDraw GX support, Credit Card Calling, WYSIWYG QuickFax - and, literally, much much more. Choose a TelePort Platinum for your Macintosh and you'll soon realise that Global Village simply outdistances the competition.

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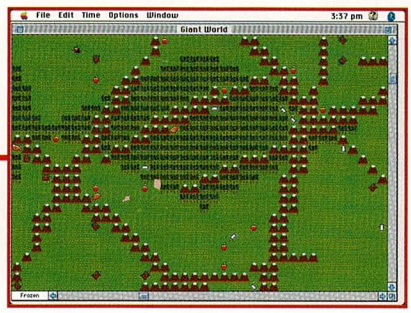
MACFORMAT

On the Disk this issue...

Two great games take starring role on this issue's floppy disk. *Snood* brings together tactics and arcade action in one engaging package, while *NS-Tower* is a climbing game where timing is everything. Experience artificial life on your own Mac with the self-evolving *Vivarium*, or perfect your typing skills with *MacTypingTutor*. Plus a selection of really useful utilities, including an easy way to clean out obsolete Preferences files, create Aliases, and more!



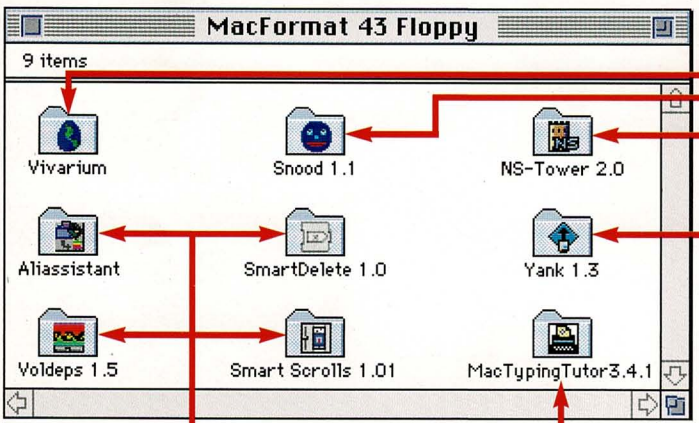
Vivarium

Experience a god's-eye view of artificial life – create an entire self-contained world in *Vivarium*. The life-forms in your world will try to eat, breed and avoid danger as they go through their life-cycle. Over the generations, they'll adapt to their environment and evolve before your very eyes, independent of any interaction from you or your Mac.

Snood 1.1

Requires: System 7.0

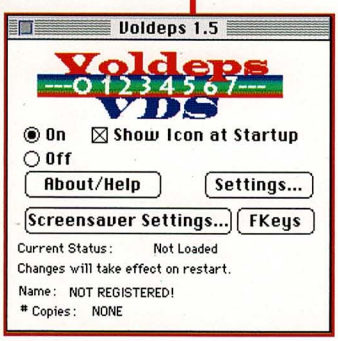
An addictive game which needs both tactical skill and shooting talent. You're at the bottom of the board in charge of a cannon. Above you is a gang of sneering Snoods which you must remove. You do this by firing other Snoods from your cannon – when you get three similar Snoods adjoining each other, they are zapped off the board. Remove them all and you've won the game!



NS-Tower 2.0

Requires: System 7.0, 640 x 480 monitor, 256 colours

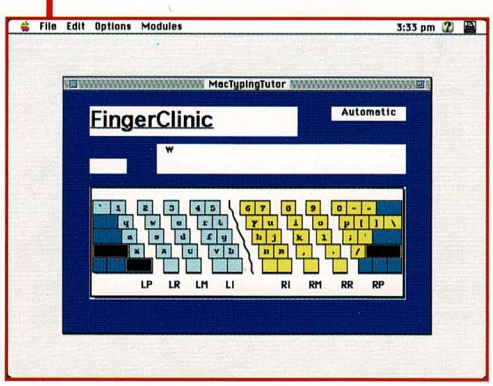
You must help your little man get to the top of the tower by jumping from platform to platform. Hold down the mouse button to build up his jumping power, and try to release it when the meter reaches its peak – too soon and he won't jump high enough; too late and the power will have drained away. It takes a minute to learn but be prepared for plenty of frustration as you try to master it!



Utilities

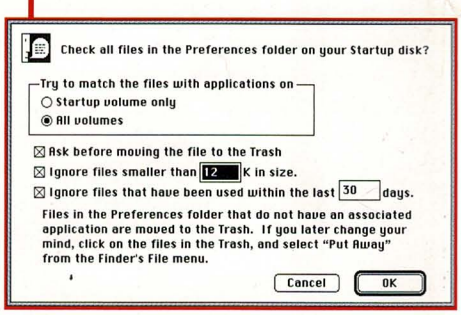
Once again, a great selection of really useful utilities to help you get more from your Mac.

- With *Voldepth* installed you can change the volume of your Mac or the bit depth of your monitor with a simple key combination. There's even a built-in screen saver.
- To make opening programs easier than ever, just drag the application onto *Aliassistant* and an Alias of the program will be added to your Apple menu.
- *SmartScrolls* is an Extension that changes the size of the scroll box in your scroll bar depending on how many pages are in the document. The box also displays how many pages are left in the document as you scroll down the pages.
- *SmartDelete* gives you keyboard short-cuts to enable you not only to delete whole words but also to delete forwards in any application.



MacTypingTutor 3.4.1

If you only type with two fingers, you're wasting hours of your precious time which could be spent perfecting your *Snood* tactics. The solution? Learn to touch-type! This easy-to-follow tutor will take you through learning key positions, typing practice and rating how many words per minute you're achieving. After only a few days of using *MacTypingTutor* you really will notice a difference to your typing skills.


Check all files in the Preferences folder on your Startup disk?
Try to match the files with applications on
Startup volume only
All volumes
Ask before moving the file to the Trash
Ignore files smaller than 12 K in size.
Ignore files that have been used within the last 30 days.
Files in the Preferences folder that do not have an associated application are moved to the Trash. If you later change your mind, click on the files in the Trash, and select "Put Away" from the Finder's File menu.
Cancel
OK

Yank 1.3.

Look in your in the depths of your System Folder you'll find all sorts of files littered around. The Preferences folder is full of files left behind by almost every application you've ever run. *Yank* tidies up this mess by scanning your Preferences folder and alerts you if it discovers any files which do not have corresponding applications installed on your hard drive. You then get the option to trash the file or leave it where it is. Once you've used *Yank*, you'll be amazed how much hard disk space was being eaten up by out-of-date files!